

## **Historic, archived document**

Do not assume content reflects current scientific knowledge, policies, or practices.



A99.9  
F764F  
1962  
Cop. 3

*Forest Survey Release No. 3*

# **TIMBER RESOURCES OF IDAHO**

ALVIN K. WILSON

U. S. DEPT. OF AGRICULTURE  
NATIONAL AGRICULTURAL LIBRARY

DEC 4 - 1962

CURRENT SERIAL RECORDS



INTERMOUNTAIN FOREST & RANGE  
EXPERIMENT STATION

FOREST SERVICE  
U. S. DEPARTMENT OF AGRICULTURE

OGDEN, UTAH

REED W. BAILEY, DIRECTOR

## FOREWORD

A recent comprehensive review of the nationwide forest situation (17)\* stresses that expected population increases may greatly increase demands for timber from the Nation's forests. In the past, the demand for wood has risen with the country's growth, and recent industry and population trends indicate that pressures for greater production and more intensive utilization of timber resources will continue.

Another recent study (3) suggests (a) that it may be impossible to meet the Nation's potential demands for wood without drawing heavily on Mountain States timber, (b) that the shifting timber supply situation between regions is steadily improving the competitive position of Mountain States timber, and (c) that the population increase in the Mountain States (which has been proportionately large in comparison with that of other regions in recent years and promises to continue so) should provide greatly expanded local markets for timber products.

These trends have special significance for Idaho, inasmuch as its output of timber products is the greatest of any of the Mountain States. It is therefore appropriate to take a detailed look at Idaho's timber resources.

The statistics and discussion that follow are based on the most recent surveys. Results of the initial Forest Survey of northern Idaho, completed in 1938, were published in 1942 (4). A second survey was made between 1947 and 1951, and its results were published in 1953 (5). The inventory data in this report were taken from the second survey and a 1950-54 survey in southern Idaho. The northern Idaho data were adjusted to allow for beetle-caused losses in Douglas-fir and Engelmann spruce that occurred after the inventory had been made.

The Forest Survey in Idaho represents the combined work of so many individuals that it is impractical to list all of them here. The northern Idaho surveys were conducted by personnel of the former Northern Rocky Mountain Forest and Range Experiment Station; the survey of southern Idaho is the result of the combined efforts of Forest Service Region 4 and Northern Rocky Mountain Station personnel. Harry W. Camp, Paul D. Kemp, and Melvin E. Metcalf directed the work of the NRM Station personnel; Joel L. Frykman, Clair R. Melvin, and Mark M. Johannesen were successively project leaders for the southern Idaho survey work done by Region 4.

*\*Italic numerals in parentheses refer to numbered items in the References section.*

# THE TIMBER RESOURCES OF IDAHO

ALVIN K. WILSON

Division of Forest Economics Research

INTERMOUNTAIN FOREST & RANGE EXPERIMENT STATION

Forest Service

United States Department of Agriculture

Ogden, Utah

Reed W. Bailey, Director



## CONTENTS

|                                    |    |
|------------------------------------|----|
| Highlights                         |    |
| Forest Land Areas                  | 1  |
| Forest Land Ownership              | 2  |
| Timber Volumes                     | 3  |
| Principal Forest Types and Species | 5  |
| Timber Growth                      | 18 |
| Production and Trends              | 19 |
| References                         | 23 |
| Appendix                           | 25 |

### *The Author*

ALVIN K. WILSON is in charge of the products and timber cut phase of the Forest Survey at Intermountain Forest and Range Experiment Station. After working in Forest Survey at the Northeastern Forest Experiment Station, he transferred to forest management research at Intermountain Station in 1949, returning to forest survey work in 1957. He is author of some 25 publications on forest management and forest economics subjects and coauthor of 4 others.

## HIGHLIGHTS

- ◆ Idaho has 21.8 million acres of forest occupying more than two-fifths of the State. Seventy-three percent of the forest land (15.8 million acres) is classed as commercial. This is divided about equally between the northern and southern portions of the State.<sup>1</sup>
- ◆ 8.7 million acres of the commercial forest is sawtimber. The principal commercial forest types are:

|                    |                   |
|--------------------|-------------------|
| Douglas-fir        | 4.8 million acres |
| Lodgepole pine     | 3.0 million acres |
| Ponderosa pine     | 2.6 million acres |
| Western white pine | 1.9 million acres |
- ◆ Four-fifths of the forest land is managed by the Federal Government.  
Most of this is national forest which contains  
16.3 million acres of forest land including  
11.3 million acres of commercial forest.
- ◆ Twenty percent of the commercial forest is in private holdings.  
Most of these private lands are in northern Idaho.
- ◆ The total volume in sawtimber trees is 115 billion board feet.<sup>2</sup>  
One-third of that volume is Douglas-fir.
- ◆ The net annual growth of sawtimber is 1.6 billion board feet.
- ◆ The sawtimber cut in 1956 was 1.9 billion board feet. During the period 1947-54 the average annual cut was 1.3 billion board feet.
- ◆ Most of the timber cut has been from private lands. However, the sawlog output from the national forests, as a percentage of total output, has been rising.

---

<sup>1</sup> The deep canyon of the Salmon River is the natural dividing line between the two commonly recognized (in Idaho) subunits. For this report, the Little Salmon River and the Adams-Idaho County line complete the separation into subunits on the western side of the State; on the eastern side, all of Lemhi County is included with southern Idaho.

These subunits are geographically and economically distinct. Only one intrastate highway joins the northern and southern subunits; there is no intrastate rail connection. Economically, northern Idaho is tied to the Inland Empire while southern Idaho's economy is mainly related to the Snake River Plains.

<sup>2</sup> International 1/4-inch log rule board-foot volumes are used throughout this report.



## FOREST LAND AREAS

• Idaho has 21,815,000 acres of forest land. This is more than two-fifths of the total land area of the State. Only eight states have more forest land, and of the Rocky Mountain States, only Montana has more than Idaho (by about one-half million acres).

Practically all this forest land is on a branch of the Rocky Mountains that reaches from Canada southward through the Idaho Panhandle to the Salmon and Sawtooth Mountains of the south-central part of the State. The main forested area of Idaho varies from 45 to 120 miles wide and stretches for 400 miles from the Canadian boundary to the Snake River Plains of southern Idaho. Smaller forested areas are located in southeastern Idaho, where the middle Rockies extend into the State.

Although the total land area of northern Idaho is less than one-third that of southern Idaho, the two subunits share the State's forest lands about equally. In northern Idaho, 10.2 million acres of forest land occupy 81 percent of the total land area, while 11.6 million forested acres cover 29 percent of southern Idaho.

| Total forest land area by major classes |             |             |             |
|---|-------------|-------------|-------------|
| Class                                   | State       | Northern    | Southern    |
| <i>Million acres</i>                    |             |             |             |
| Commercial:                             | 15.8        | 7.8         | 8.0         |
| Noncommercial:                          |             |             |             |
| Productive-reserved                     | 1.9         | .9          | 1.0         |
| Unproductive                            | 4.1         | 1.5         | 2.6         |
| <b>Total</b>                            | <b>21.8</b> | <b>10.2</b> | <b>11.6</b> |

• Commercial forest land includes land capable of, and available for, producing commercially valuable tree crops. Seventy-three percent of the State's forest area belongs in this broad land classification. Idaho accordingly ranks sixteenth among all states and first among the Mountain States in commercial forest land area.

| Commercial forest land area by stand-size classes |             |            |            |
|---|-------------|------------|------------|
| Class   | State       | Northern   | Southern   |
| <i>Million acres</i>                              |             |            |            |
| Sawtimber   | 8.7         | 3.5        | 5.2        |
| Poletimber  | 3.9         | 1.9        | 2.0        |
| Seedling-sapling                                  | 1.6         | 1.2        | .4         |
| Nonstocked and other                              | 1.6         | 1.2        | .4         |
| <b>Total</b>                                      | <b>15.8</b> | <b>7.8</b> | <b>8.0</b> |

• Sawtimber stands occupy 8.7 million acres or more than half the commercial forest area. Only four states (Oregon, Washington, California, and Alaska) have more sawtimber area than Idaho. It is estimated that more than a third of the sawtimber stands are old-growth timber. The large amount of old-growth timber reflects the slower exploitation rate (as compared to other regions) that has prevailed in Idaho and other Mountain States until recently. It also presents forest land managers with a series of complex problems having to do with (a) prevention of excessive losses in timber that is overmature and highly susceptible to damage by insects, disease, windthrow, and other agencies; (b) economically salvaging losses that do occur; and (c) the orderly conversion of these old-growth stands to healthy managed stands.

Northern Idaho has had a history of more intensive use than southern Idaho. This is reflected in the fact that sawtimber stands now occupy 45 percent of the commercial forest land in that part of the State, but they occupy 65 percent of the commercial forest land of southern Idaho.

• Poletimber stands have less than 1,500 board feet per acre and are characterized by trees between 5 and 11 inches in diameter. These stands occupy one-fourth of the State's commercial forest land.

• One-fifth of the commercial forest land is seedling-sapling stands and nonstocked areas.

The striking feature in the distribution of these size classes is that three-fourths of the total area of each is in northern Idaho. This again reflects the longer history of use in northern Idaho but is also due to northern Idaho's severe fire history. The worst fires in northern Idaho were in 1910; they burned over an estimated 1.9 million acres. Large areas were also burned in 1919, 1926, 1929, 1931, and 1934. More than 1 acre out of every 7 of commercial forest land in northern Idaho is nonstocked. Given enough time, much of this land would restock naturally, but many nonstocked areas have persisted for 40 years or more. Over large areas, brush cover, steep topography, and inaccessibility complicate the rehabilitation that must be done if these lands are to contribute effectively to meet increased forest products requirements a few years from now.

- Six million acres of Idaho's forest are non-commercial. Of this 6 million acres, more than

4 million belong in the noncommercial class because they are unproductive for timber use. Typically, these are adverse sites including extremely rocky land, subalpine areas, or certain kinds of persisting brushlands where tree form and growth rates are so poor as to exclude them from consideration as economically feasible timber sources. However, some isolated areas capable of producing timber crops may be included as unproductive because they are physically and economically inaccessible.

Noncommercial forest land in the "productive-reserved" category totals 1.9 million acres. These lands could produce commercially valuable timber crops but are not available for this use because of their reserved status. Nearly all of this land is in wilderness areas (the Selway-Bitterroot and Sawtooth), the Idaho Primitive Area, and Yellowstone National Park. However, a small amount of State-owned land is reserved also.

## FOREST LAND OWNERSHIP

- A high percentage of Idaho's forest land area is federally managed. Either through ownership or trusteeship (in the case of Indian lands), the Federal Government is responsible for four-fifths of Idaho's 21.8 million forested acres. Most of these acres are in 16 national forests.<sup>3</sup> The national forests contain 16.3 million acres of Idaho's forest land. Indian lands, Bureau of Land Management lands, and national park lands make up the remainder of the Federal area. Private holdings, mostly in nor-

thern Idaho, contain 15 percent of all forest land. The remaining 5 percent are State-owned lands.

- Seventy-one percent of the 15.8 million acres of commercial forest land is in national

Commercial forest land area by ownership classes

| Class           | State Northern Southern |            |            |
|-----------------|-------------------------|------------|------------|
|                 | <i>Million Acres</i>    |            |            |
| National forest | 11.3                    | 4.4        | 6.9        |
| Other Federal   | .5                      | .2         | .3         |
| State           | .9                      | .7         | .2         |
| Private         | 3.1                     | 2.5        | .6         |
| <b>Total</b>    | <b>15.8</b>             | <b>7.8</b> | <b>8.0</b> |

<sup>3</sup> Eight national forests (the Coeur d'Alene, St. Joe, Clearwater, Nezperce, Payette, Boise, Salmon, and Challis) are entirely within Idaho. The major parts of four more (the Kaniksu, Sawtooth, Targhee, and Caribou) are within the State, and parts of four others (the Kootenai, Lolo, Bitterroot, and Cache) extend into Idaho from neighboring states.

forests, and other federally managed areas account for another 3 percent. Private holdings contain 20 percent of the commercial forest land. Four-fifths of the private holdings are in northern Idaho and more than half of their total area is in industrial ownership. Two-thirds of the State-owned commercial forest land is also in northern Idaho.

- Of Idaho's 6 million acres of noncommercial forest land, 5 million acres (84 percent) are in national forests. More than half of this 5 million acres is in the Selway-Bitterroot and

Sawtooth Wilderness Areas and in the Idaho Primitive Area.

| Noncommercial forest land area by ownership classes |                      |                  |          |
|---|----------------------|------------------|----------|
| Class   | State                | Northern         | Southern |
|   | <i>Million Acres</i> |                  |          |
| National forest                                     | 5.0                  | 2.2              | 2.8      |
| Other Federal                                       | .5                   | ( <sup>1</sup> ) | .5       |
| State   | .2                   | .1               | .1       |
| Private   | .3                   | .1               | .2       |
| Total   | 6.0                  | 2.4              | 3.6      |

<sup>1</sup> Less than 0.05 million acres.

## TIMBER VOLUMES

- Idaho's commercial forest contains 115 billion board feet in sawtimber trees (trees of commercial species that are 11.0 inches or larger in diameter at breast height and contain at least one merchantable sawlog). In the United States, greater sawtimber volumes are found only in the four Pacific Coast States. Among the Rocky Mountain States, Idaho's sawtimber volume is twice that of the next most heavily timbered state.

More than 95 percent of the sawtimber tree volume is in sawtimber stands (stands containing 1,500 board feet per acre or more in sawtimber trees). Northern Idaho has 53 percent of the State's total sawtimber volume.

- Douglas-fir is the most abundant timber species in Idaho. It constitutes nearly a third of the State's total sawtimber volume. There is, in fact, almost twice as much Douglas-fir as there is ponderosa pine, the second ranking species. Four principal species—Douglas-fir, ponderosa pine, the true firs (mostly grand fir), and western white pine—make up more than three-fourths of the sawtimber. Most of the

Douglas-fir and ponderosa pine grows in southern Idaho, but northern Idaho has all of the highly valuable western white pine and most of the volume in true firs.

| Net board-foot volume in sawtimber trees by species |                                       |          |          |
|---|---------------------------------------|----------|----------|
| Species   | State                                 | Northern | Southern |
|   | <i>Billion board feet<sup>1</sup></i> |          |          |
| Douglas-fir   | 36.6                                  | 11.4     | 25.2     |
| Ponderosa pine                                      | 19.3                                  | 6.9      | 12.4     |
| True firs <sup>2</sup>                              | 19.2                                  | 11.9     | 7.3      |
| Western white pine                                  | 13.4                                  | 13.4     | 0        |
| Spruce  | 9.6                                   | 4.8      | 4.8      |
| Western larch                                       | 6.1                                   | 5.6      | .5       |
| Lodgepole pine                                      | 4.8                                   | 1.2      | 3.6      |
| Other species                                       | 6.0                                   | 5.5      | .5       |
| Total   | 115.0                                 | 60.7     | 54.3     |

<sup>1</sup>International 1/4-inch log rule. Scribner log rule volumes can be approximated by multiplying the above figures by 0.89.

<sup>2</sup> Grand and subalpine firs.

● Half of the State's sawtimber volume is in trees between 11 and 20.9 inches in diameter, and an additional third is in trees from 21 to 30.9 inches in diameter. The remaining 17 percent of the volume is in trees larger than 31 inches—definitely in the overmature category, which is especially susceptible to mortality losses.

The State's 15.8 million acres of commercial forest land have an average of 7.3 thousand board feet per acre in sawtimber trees. Sawtimber stands alone average 12.6 thousand board feet per acre.

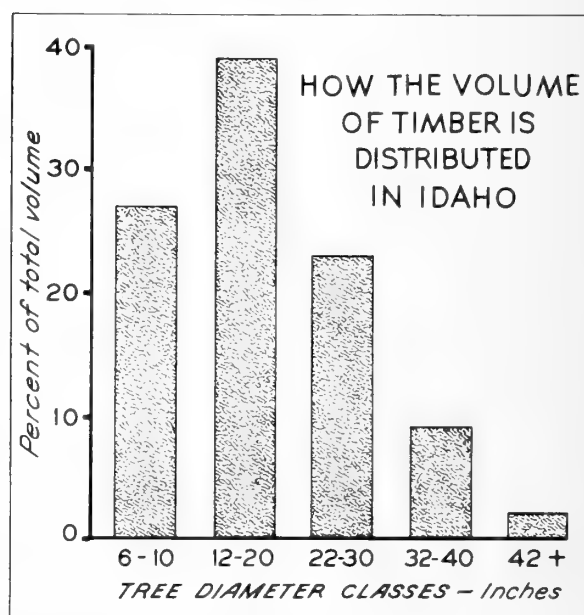
● The total volume of all "growing stock" is 26 billion cubic feet. This volume includes trees of commercial species 5.0 inches and larger in diameter at breast height that meet Forest Survey standards for soundness and form (see definitions). Sawtimber and poletimber stands together contain 98.7 percent of all growing stock volume in Idaho.

● Thirty percent of the growing stock is Douglas-fir. This species is particularly important in southern Idaho, which has two-thirds of the Douglas-fir. The true firs rank second although their total volume is only slightly more than half that of Douglas-fir. Lodgepole pine ranks only seventh in sawtimber volume, but ranks third in growing stock volume. Two-thirds of the lodgepole pine growing stock is in southern Idaho.

Net cubic-foot volume in growing stock trees  
by species

| Species                   | State       | Northern    | Southern    |
|---------------------------|-------------|-------------|-------------|
| <i>Billion cubic feet</i> |             |             |             |
| Douglas-fir               | 7.7         | 2.5         | 5.2         |
| True firs <sup>1</sup>    | 4.2         | 2.5         | 1.7         |
| Lodgepole pine            | 3.7         | 1.2         | 2.5         |
| Ponderosa pine            | 3.2         | 1.2         | 2.0         |
| Western white pine        | 2.4         | 2.4         | 0           |
| Spruce                    | 1.8         | .9          | .9          |
| Western larch             | 1.3         | 1.2         | .1          |
| Other species             | 1.6         | 1.3         | .3          |
| <b>Total</b>              | <b>25.9</b> | <b>13.2</b> | <b>12.7</b> |

<sup>1</sup> Grand and subalpine firs.



Board-foot volume per acre<sup>1</sup> in sawtimber trees by stand-size classes

| Stand-size classes   | State                             |                 | Northern                          |                 | Southern                          |                 |
|----------------------|-----------------------------------|-----------------|-----------------------------------|-----------------|-----------------------------------|-----------------|
|                      | Percent of commercial forest area | M b.f. per acre | Percent of commercial forest area | M b.f. per acre | Percent of commercial forest area | M b.f. per acre |
| Sawtimber            | 55                                | 12.6            | 22                                | 16.5            | 33                                | 9.9             |
| Poletimber           | 25                                | 1.2             | 12                                | 1.1             | 13                                | 1.2             |
| Seedling-sapling     | 10                                | .2              | 7                                 | .2              | 3                                 | .4              |
| Nonstocked and other | 10                                | .2              | 8                                 | .2              | 2                                 | .2              |
| <b>All classes</b>   | <b>100</b>                        | <b>7.3</b>      | <b>49</b>                         | <b>7.8</b>      | <b>51</b>                         | <b>6.7</b>      |

<sup>1</sup> International 1/4-inch log rule.

## PRINCIPAL FOREST TYPES AND SPECIES

On the following pages, the most important forest types and timber species in Idaho are discussed. These are:

Douglas-fir  
Ponderosa pine  
Spruce and true firs  
Western white pine  
Western larch  
Lodgepole pine

In the table and text for each, it should be noted that (a) *area data* apply to the forest type, which can and often does contain several species other than the one for which the type is named; and (b) *volume data* apply to the subject species only, and include its volume wherever the species occurs. For the convenience of those interested in the principal statistics for individual types and species, some data presented elsewhere are repeated here.

*Principal  
Occurrence*



## Douglas-fir

**AREA** of the Douglas-fir type (thousands of acres):

|                           | State | Northern | Southern |
|---------------------------|-------|----------|----------|
| Sawtimber stands          | 3,606 | 668      | 2,938    |
| Poletimber stands         | 694   | 339      | 355      |
| Seedling-sapling stands   | 224   | 181      | 43       |
| Nonstocked and deforested | 274   | 98       | 176      |
| Total                     | 4,798 | 1,286    | 3,512    |

**VOLUME** of Douglas-fir timber (billions):

|                            |      |      |      |
|----------------------------|------|------|------|
| Sawtimber (board feet)     | 36.6 | 11.4 | 25.2 |
| Growing stock (cubic feet) | 7.7  | 2.5  | 5.2  |

DOUGLAS-FIR <sup>4</sup> is one of the most widely distributed timber species of the United States; on the basis of total stand volume, it is the most important timber tree in the country. In these respects, the situation of Douglas-fir is much the same in Idaho as in the Nation. Other species, notably western white pine and ponderosa pine, command higher prices in Idaho's timber markets, but Douglas-fir is the most abundant and widespread species, and it provides a larger proportion of the timber cut than any other single species.

The Douglas-fir type occupies nearly one-third of Idaho's commercial forest land. Its 4.8 million acres are distributed throughout the State, but most of the acreage (73 percent) is in southern Idaho.

Commercial forest lands support 36.6 billion board feet of Douglas-fir sawtimber—32 percent of the State's total sawtimber volume. Although trees larger than 40 inches d.b.h. are not infrequent, about half of the sawtimber volume is in trees between 11 and 21 inches

d.b.h. and 85 percent is in trees smaller than 31 inches.

Because it is widely distributed, generally accessible, and is one of the two strongest of Idaho's native softwoods,<sup>5</sup> Douglas-fir has been used for lumber and other products since the beginning of settlement in the State. It also supplies a substantial part of the lumber exported to other states.

In years past, the output of Douglas-fir lumber has been exceeded by the production of white pine and ponderosa pine. Recently, however, the output of these latter two species has declined, and production from Douglas-fir has mounted. Douglas-fir moved into first place in 1956.

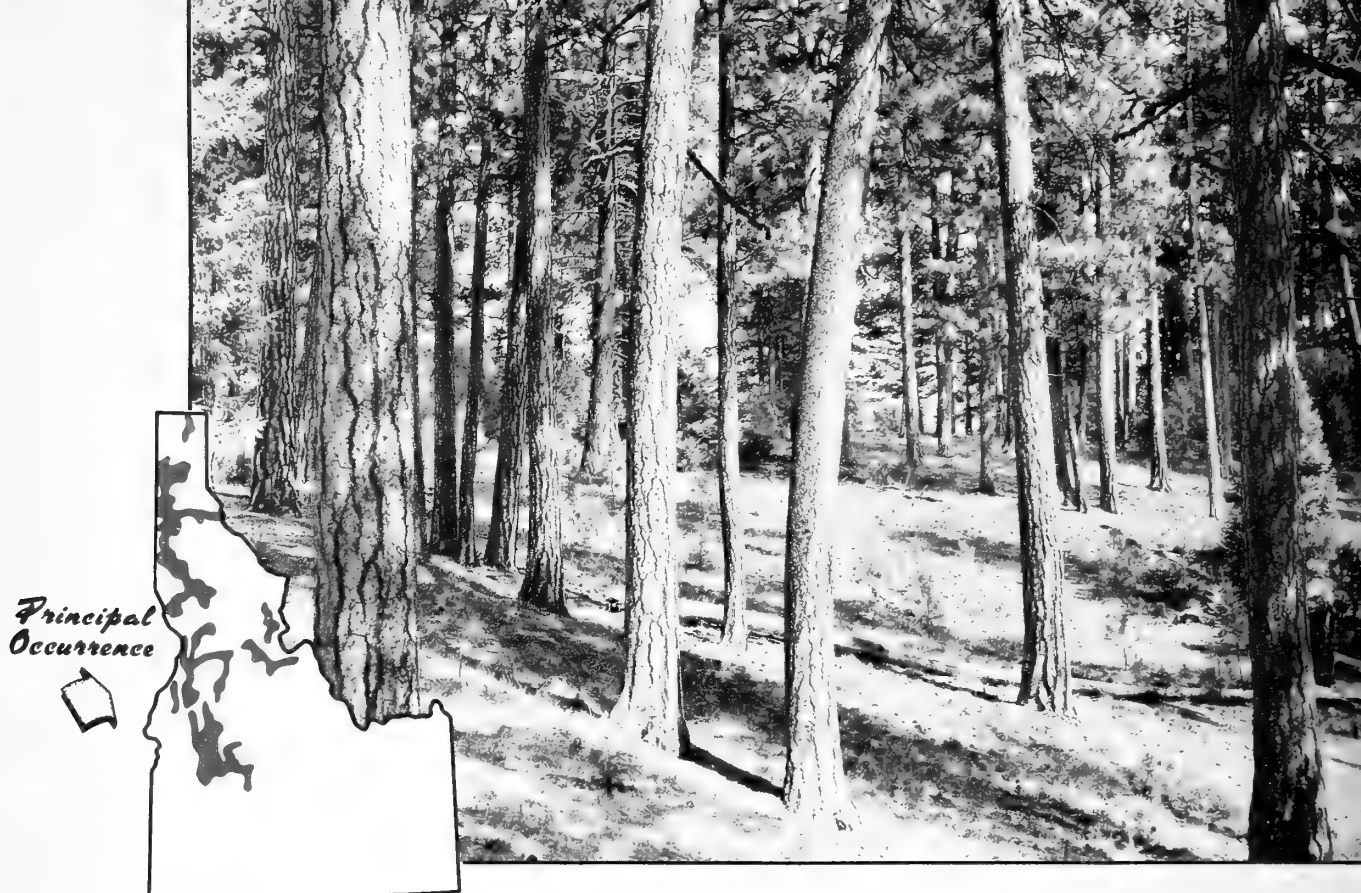
It is becoming increasingly evident that in the future Douglas-fir will be cut in greater amounts to meet demands for lumber, veneer, and commercial poles and pulpwood, if only because of its abundance in the State's timber stands.

---

<sup>4</sup> Two forms of Douglas-fir, the coast and inland forms, are commonly recognized. Only the inland form occurs naturally in Idaho.

---

<sup>5</sup> In combined bending and compressive strength, western larch is the strongest, followed by Douglas-fir. (U.S.D.A. Forest Products Laboratory Report No. 1169, rev. 1956.)



## Ponderosa Pine

**AREA** of the ponderosa pine type (thousands of acres):

|                           | State | Northern | Southern |
|---------------------------|-------|----------|----------|
| Sawtimber stands          | 1,936 | 600      | 1,336    |
| Poletimber stands         | 274   | 223      | 51       |
| Seedling-sapling stands   | 127   | 121      | 6        |
| Nonstocked and deforested | 287   | 165      | 122      |
| Total                     | 2,624 | 1,109    | 1,515    |

**VOLUME** of ponderosa pine timber (billions):

|                            |      |     |      |
|----------------------------|------|-----|------|
| Sawtimber (board feet)     | 19.3 | 6.9 | 12.4 |
| Growing stock (cubic feet) | 3.2  | 1.2 | 2.0  |



PONDEROSA PINE is the most widely distributed pine species in North America and is one of the most important timber trees of the United States.

In the interior of western United States, the ponderosa pine type is typically the first timber type of consequence encountered as one proceeds from the deserts, valley bottoms, and prairies to higher elevations. Since the valleys and prairies were the routes of travel and the sites of earliest settlement, the ponderosa pine type has been used longer and more continuously than any other.

In Idaho the ponderosa pine type is the third most extensive and covers slightly less than 17 percent (2.6 million acres) of the

State's commercial forest land. Fifty-eight percent of the ponderosa pine area is in southern Idaho.

Ponderosa pine sawtimber totals more than 19 billion board feet; 64 percent of this volume is in southern Idaho. The species accounts for 17 percent of the State's sawtimber volume and is second in volume only to Douglas-fir.

Between 1900 and the late 1940's, except for a short period in the early 1930's, ponderosa pine consistently made up 25 to 40 percent of the timber cut. Production of lumber from this species reached its all-time peak, 417 million board feet, in 1948, but since then has fallen. In 1956 the production of ponderosa pine lumber was 304 million board feet.

*Principal  
Occurrence*



## Spruce and True Firs

**AREA** of the spruce and true fir types (thousands of acres):

|                           | State | Northern | Southern |
|---------------------------|-------|----------|----------|
| Sawtimber stands          | 1,311 | 771      | 540      |
| Poletimber stands         | 257   | 125      | 132      |
| Seedling-sapling stands   | 109   | 103      | 6        |
| Nonstocked and deforested | 78    | 40       | 38       |
| Total                     | 1,755 | 1,039    | 716      |

**VOLUME** of spruce and true fir timber (billions):

|                            |      |      |      |
|----------------------------|------|------|------|
| Sawtimber (board feet)     | 28.8 | 16.7 | 12.1 |
| Growing stock (cubic feet) | 6.0  | 3.4  | 2.6  |

ENGELMANN SPRUCE and two true firs, GRAND FIR and SUBALPINE FIR, are widely distributed in Idaho. Each one is the characterizing species of a recognized forest type, but the three are grouped here because (a) they frequently occur in mixture with each other and as associates in a number of other types; (b) all three species have several similarities for utilization; and (c) the wide dispersion of the individual types makes it virtually impossible to show them separately on a generalized forest type map.<sup>6</sup>

The spruce-true fir group of types occupies 11 percent of Idaho's commercial forest land. Half of this area (874,000 acres) is in the grand fir type and the rest is divided almost equally between the Engelmann spruce (463,000 acres) and the subalpine fir (418,000 acres) types. These types occur in practically all of the timbered parts of the State but the most extensive areas are in the central portion.

Commercial forest land area in the spruce type is about equally divided between the State subunits, but practically all of the grand fir

type is in northern Idaho while all of the commercial subalpine fir type is in the south.

Together these species constitute about one-fourth of the State's sawtimber inventory. One-eighth of the sawtimber is grand fir, which ranks third after Douglas-fir and ponderosa pine. Eight percent of Idaho's sawtimber is Engelmann spruce and 5 percent is subalpine fir.

Lumber production from the true firs, which averaged about 100 million board feet a year in the late 1940's, reached 305 million board feet in 1956. The market status of Engelmann spruce was especially improved by an aggressive salvage and sales program that began in 1952 to reclaim beetle-killed spruce in northern Idaho counties. The cut of spruce lumber increased twelvefold between the late 1940's and 1956. Lumber from spruce and the true firs comprised one-third of the State's total production in 1956.

All three species are suitable for pulping and have provided an important part of the wood supply for Inland Empire mills. Some pulpwood has been shipped to the west coast also. During the period 1948-56 about 55 percent of the round pulpwood cut in Idaho was of these species.

---

<sup>6</sup> Separate area data for each type and volume data for each species are given in supplementary tables 14, 17, and 18 in the Appendix.

*Principal  
Occurrence*



## Western White Pine

**AREA** of the western white pine type (thousands of acres):

|                           | State | Northern | Southern |
|---------------------------|-------|----------|----------|
| Sawtimber stands          | 782   | 782      | 0        |
| Poletimber stands         | 316   | 316      | 0        |
| Seedling-sapling stands   | 142   | 142      | 0        |
| Nonstocked and deforested | 680   | 680      | 0        |
| Total                     | 1,920 | 1,920    | 0        |

**VOLUME** of western white pine timber (billions):

|                            |      |      |   |
|----------------------------|------|------|---|
| Sawtimber (board feet)     | 13.4 | 13.4 | 0 |
| Growing stock (cubic feet) | 2.4  | 2.4  | 0 |

**WESTERN WHITE PINE** is the most valuable of Idaho's tree species. White pine sawtimber stands represent more than a third of the value of all the State's sawtimber,<sup>7</sup> although they contain less than one-eighth of all sawtimber volume. About 1900, they were a major factor in attracting lumbermen from other parts of the country.

All of Idaho's western white pine grows in the northern subunit, where the type occupies 25 percent of the commercial forest. Most of the white pine land is in Shoshone and Clearwater Counties.

White pine blister rust has made considerable inroads in the type. This disease was introduced into Idaho in 1923. Although a control program has been effective in curbing the disease, many white pine stands outside the control zone have been hard hit by blister rust. Extensive areas of white pine have been converted to other forest types by the killing off of their western white pine component. Since

this conversion has taken place largely in young stands, the disease has not greatly affected the supply of old-growth western white pine timber.

Idaho has nearly two-thirds of all the western white pine sawtimber in the United States. The present volume of 13 billion board feet is about 60 times the annual rate of cutting in the State in recent years.

Western white pine has been one of the main supports of Idaho's lumber industry for most of the industry's existence. Between 1913 and 1940 more than two-fifths of all the lumber produced in the State was white pine, turned out at an average annual rate of 322 million board feet. In the depression year of 1932, when lumber output sank to the lowest point since 1905, total production was only 248 million board feet but 68 percent of it was white pine. White pine lumber production reached an all-time peak of 460 million board feet in 1937, while the depression was still being felt.

About 1940, however, production of white pine lumber began to decline rapidly and has since leveled off at about 200 million board feet annually.

---

<sup>7</sup> Estimated from Forest Service Region 1 average stumpage prices for 1958.



## Western Larch

### AREA

of the western larch type (thousands of acres):

|                           | State | Northern | Southern         |
|---------------------------|-------|----------|------------------|
| Sawtimber stands          | 306   | 302      | 4                |
| Poletimber stands         | 190   | 189      | 1                |
| Seedling-sapling stands   | 169   | 169      | ( <sup>1</sup> ) |
| Nonstocked and deforested | 65    | 64       | 1                |
| Total                     | 730   | 724      | 6                |

### VOLUME

of western larch timber (billions):

|                            |     |     |     |
|----------------------------|-----|-----|-----|
| Sawtimber (board feet)     | 6.1 | 5.6 | 0.5 |
| Growing stock (cubic feet) | 1.3 | 1.2 | .1  |

<sup>1</sup>Less than 500 acres.

The range of **WESTERN LARCH** in northwestern United States is centered in northern Idaho. It is the largest of the American larches and is one of the best formed of Idaho's timber species. Individual trees occasionally exceed 40 inches in diameter, but 83 percent of the sawtimber volume is in trees between 11 and 31 inches in diameter. Because the mature trees are typically tall and straight and have a high percentage of clear length, western larch can produce more clear wood than any other local species.

Western larch is a northern species; only 6,000 acres of the type occur in southern Idaho. Sawtimber stands occupy 42 percent of the type area.

More than one-fifth of all the western larch sawtimber in the United States grows in Idaho. This volume, 6.1 billion board feet, is about 5 percent of the State's total sawtimber volume.

Western larch is often not distinguished from its principal associate, Douglas-fir, in lumber trade practice. However, differences between the two species are becoming more important

both to timber management and marketing. Larch timber is cut mainly for lumber, but it is also a fine veneer wood and is used extensively for utility poles, pulpwood, railroad ties, and mine timbers. Its clean-boled form and strength—it is the strongest of Idaho's softwoods—are special assets for these uses. In 1956, 6 percent of the pulpwood produced in Idaho was larch and nearly one-fourth of all utility poles produced in the Inland Empire between 1947 and 1956 were of this species.

Western larch is unique in wood chemistry among softwoods as a source of arabogalactan, a wood sugar, that can be used in manufacturing baking powder and other products. The gum from which arabogalactan is derived is often concentrated in the butt logs of larch trees in quantities sufficient to make that part of the tree unsuitable for lumber. Research is in progress to develop pharmaceutical products from arabogalactan; this would turn a present economic liability into an asset.<sup>8</sup>

---

<sup>8</sup> Washington State Institute of Technology. News Items 4(1): 1-2. February 1960.

*Principal  
Occurrence*



## Lodgepole Pine

**AREA** of the lodgepole pine type (thousands of acres):

|                           | State | Northern | Southern |
|---------------------------|-------|----------|----------|
| Sawtimber stands          | 480   | 106      | 374      |
| Poletimber stands         | 1,837 | 645      | 1,192    |
| Seedling-sapling stands   | 539   | 365      | 174      |
| Nonstocked and deforested | 142   | 93       | 49       |
| Total                     | 2,998 | 1,209    | 1,789    |

**VOLUME** of lodgepole pine timber (billions):

|                            |     |     |     |
|----------------------------|-----|-----|-----|
| Sawtimber (board feet)     | 4.8 | 1.2 | 3.6 |
| Growing stock (cubic feet) | 3.7 | 1.2 | 2.5 |



In Idaho, the **LOGGEPOLE PINE** type is second only to the Douglas-fir type in area. It is the only one of the six types discussed here that has its greatest acreage in poletimber stands rather than in sawtimber stands. However, much of the poletimber is mature.

The inland or mountain form of lodgepole pine (the form that grows in Idaho) is typically small in diameter but relatively tall and straight of stem. Even so, the species produces considerable sawtimber, as the 4.8 billion board feet in Idaho's forests attest.

Use of lodgepole pine for lumber has been very limited, but records show that some lodgepole pine lumber has been sawed each year since 1909. In round form, lodgepole pine has had considerable use on farms in southern Idaho; it was also a major source of ties 25 to 40 years ago.

Idaho has vast areas of pure, practically untouched, lodgepole pine stands, mainly because the State's timber industry has been largely based on lumber production, for which larger tree species have always been available. In recent years, improved procedures for handling small logs and other factors have combined to increase the output of lodgepole pine lumber. In 1948, only 5.2 million board feet of lumber were produced from the species, but lumber production was 18.4 million board feet in 1954, and in 1956 was 13.5 million board feet.

Lodgepole pine probably has as great potentialities for pulpwood as any species in the State. For this use, the tree's small size is no disadvantage, and the extensive pure stands form a large reserve. About 3,000 cords of lodgepole pine were harvested for pulpwood in 1952. By 1956, rail shipments to the Lake States region from southeastern Idaho had swelled to more than 23,000 cords and more than 25,000 cords were shipped in 1959. Since 1959, shipments have declined.

Lodgepole pine makes excellent commercial poles, especially in the smaller sizes. Its straight stem, gradual taper, and ready absorption of preservatives are all assets for this use. Available records indicate peak production of lodgepole pine poles in northern Idaho probably occurred in 1946 with an output of 37,100 poles when the Rural Electrification Administration program was in full swing. By 1950, northern Idaho production of commercial lodgepole pine poles had practically ceased, largely because of the continued availability of the favored western redcedar and the reduced demand for smaller sizes of poles in rural power and telephone line construction. All pole production from southern Idaho has been of lodgepole pine and has averaged about 8,000 poles annually for the past several years.

## TIMBER GROWTH

• For the 1947-54 period, the net annual growth on sawtimber trees was 1,646 million board feet, a net annual increase of 1.4 percent.<sup>9</sup> For all commercial forest land in Idaho this was only 104 board feet per acre per year, but the average was considerably higher when related only to sawtimber trees in sawtimber stands. It is estimated that the average sawtimber stand in Idaho added a net volume of about 180 board feet per acre annually during the survey period.

• The net annual growth of growing stock trees (1947-54) was 469 million cubic feet, a net annual increase of 1.8 percent. For all commercial forest land, cubic volume increment was nearly 30 cubic feet per acre per year.

Northern Idaho's net growth rate of 36 cubic feet per acre per year was 50 percent higher than southern Idaho's 24 cubic feet per acre. Differences in the average productivity of forest land in the two subunits were probably the main reason for this.

<sup>9</sup> These growth levels are strongly influenced by the low growth rates characteristic of the large areas of old-growth timber still remaining in Idaho. Because of this, they do not afford meaningful bases for decisions on allowable timber cutting levels or for estimating the potential productivity of the State's commercial forest land.

• An average of 608 million board feet of sawtimber was lost annually to insects, diseases, and other forms of attrition. Although this loss totaled nearly the same in both subunits (296 million board feet and 312 million board feet, respectively, for northern and southern Idaho), it was proportionately more severe in southern Idaho where the volume of live sawtimber is less.

Practically all mortality of sawtimber trees (91 percent) occurred in sawtimber stands. In such stands the average annual loss was more than 63 board feet per acre per year.

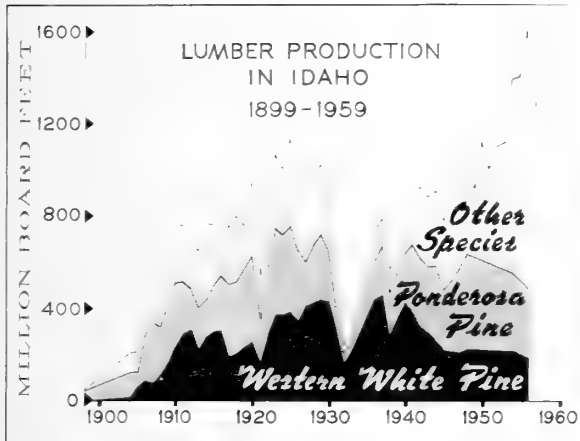
Nearly two-thirds of all sawtimber mortality occurred in Douglas-fir and the true firs, although together they comprise slightly less than half of the sawtimber volume. Only western hemlock and lodgepole pine had higher loss percentages than Douglas-fir and the true firs.

• Mortality losses in growing stock averaged 147 million cubic feet per year for the survey period. Sixty percent of the annual loss occurred in southern Idaho's timber stands, although these stands contain somewhat less than half of the State's growing stock volume.

| Annual growth and mortality of sawtimber and growing stock by species |                           |               |            |                           |               |            |
|---|---------------------------|---------------|------------|---------------------------|---------------|------------|
| Species   | Sawtimber                 |               |            | Growing stock             |               |            |
|   | Gross growth              | Net Mortality | Net growth | Gross growth              | Net Mortality | Net growth |
|   | <i>Million board feet</i> |               |            | <i>Million cubic feet</i> |               |            |
| Douglas-fir   | 698                       | 253           | 445        | 165                       | 48            | 117        |
| True firs   | 522                       | 133           | 389        | 124                       | 31            | 93         |
| Ponderosa pine  | 269                       | 46            | 223        | 51                        | 10            | 41         |
| Western white pine  | 236                       | 34            | 202        | 51                        | 7             | 44         |
| Spruce  | 169                       | 35            | 134        | 38                        | 6             | 32         |
| Lodgepole pine  | 139                       | 42            | 97         | 112                       | 32            | 80         |
| Other   | 221                       | 65            | 156        | 75                        | 13            | 62         |
| Total   | 2,254                     | 608           | 1,646      | 616                       | 147           | 469        |

# PRODUCTION AND TRENDS

Logs for lumber, pulpwood, and utility poles have been the principal products cut from Idaho timber in recent years. However, sawlogs for lumber have been by far the most important product, making up about 95 percent of the total production. Lumber output has been



increasing rapidly since the middle 1930's. In 1947, for example, 951 million board feet (7) were produced by local mills. Between then and 1959 lumber output nearly doubled.

Volume of timber cut<sup>1</sup> for primary products from sawtimber and growing stock, 1956

| Product              | Sawtimber          |              | Growing Stock      |              |
|----------------------|--------------------|--------------|--------------------|--------------|
|                      | Million Board Feet | Percent      | Million Cubic Feet | Percent      |
| Sawlogs <sup>2</sup> | 1,830              | 96.1         | 305                | 94.3         |
| Pulpwood logs        | 52                 | 2.7          | 8                  | 2.6          |
| Pulpwood bolts       | 6                  | .3           | 2                  | .6           |
| Poles                | 6                  | .3           | 3                  | .9           |
| Fuelwood             | 5                  | .3           | 2                  | .6           |
| Other <sup>3</sup>   | 6                  | .3           | 3                  | 1.0          |
| <b>Total</b>         | <b>1,905</b>       | <b>100.0</b> | <b>323</b>         | <b>100.0</b> |

<sup>1</sup> Logging residues for 1956 were estimated to be 85 million board feet for the total sawtimber cut and 32 million cubic feet for the total cut from growing stock.

<sup>2</sup> Practically all sawlogs were for lumber, but these figures also include veneer logs.

<sup>3</sup> Includes mine timbers, shingle logs and bolts, posts, and miscellaneous farm timbers.

• During the period 1947-54 the timber cut from sawtimber for all products averaged 1.3 billion board feet.<sup>10</sup> In 1956, 1.9 billion board feet were cut; fragmentary data (15) indicate that this record high was surpassed in 1959.

• Depending upon the formulae used and the assumptions made with each, estimates for the allowable annual cut (see definitions) for the State range from 2.0 to 2.5 billion board feet. These estimates are based on existing forest conditions—which in Idaho means that they are strongly influenced by the high proportion of decadent old-growth timber and large amounts of nonstocked forest land.

Comparison of sawtimber cut with allowable cut estimates indicates that up to and through the 1947-54 period the State's timber capital as a whole was not depleted by cutting. This inference is supported also by comparison of timber cut volumes with the net annual growth rate; this shows that prior to 1955 the annual sawtimber cut was more than replaced by the net annual growth of sawtimber. By 1959, a timber cut estimated at 2.1 billion board feet was reached—a point within the allowable cut range and considerably above the Forest Survey's estimate of net annual growth.

Net annual sawtimber growth and sawtimber cut for selected years, 1946-56, by State subunits

| Unit     | Net<br>annual<br>growth | Total sawtimber cut |      |       |       |       |       |
|----------|-------------------------|---------------------|------|-------|-------|-------|-------|
|          |                         | 1946                | 1948 | 1950  | 1952  | 1954  | 1956  |
|          |                         | Million board feet  |      |       |       |       |       |
| State    | 1,646                   | 970                 | —    | —     | 1,300 | 1,590 | 1,905 |
| Northern | 959                     | 740                 | 880  | 1,020 | 1,070 | —     | 1,570 |
| Southern | 687                     | 230                 | —    | —     | 230   | —     | 335   |

<sup>10</sup> Bases for estimates: Northern Rocky Mountain Forest and Range Experiment Station file records of sawmill log receipts and lumber production for 1946, 1948, and 1950; also NRM Station Paper 35 and Research Note 136; Intermountain Forest and Range Experiment Station file data prepared for U.S.F.S. Forest Resource Report No. 14, also Research Note 54; Bureau of the Census 1947 and 1954 Censuses of Manufactures (Lumber and Timber Basic Products).

- Northern Idaho, with 53 percent of the sawtimber, has provided most of the timber cut (more than 82 percent of the 1956 total) but her annual cut from sawtimber did not reach the lower estimate of allowable cut for the subunit (1.1 billion board feet) until about 1952; the upper estimate of 1.4 billion board feet was reached about 1955. Southern Idaho's sawtimber cut in 1956 (335 million board feet) was less than half of the estimated allowable cut of 0.7 billion board feet.

- Much that has been said about the distribution of the sawtimber cut applies as well to the timber cut from all growing stock. For the field inventory period (1947-54), the average annual cut of growing stock was about 220 million cubic feet. The cut for 1954 is estimated to have been about 281 million cubic feet; in 1956 it rose to 323 million cubic feet.

These timber cut estimates are markedly below the Forest Survey estimate of 469 million cubic feet for the net annual growth rate for trees 5.0 inches d.b.h. and larger. This difference comes about because of the growth being added to great numbers of small trees and because Idaho has practically no markets for wood from small trees. Evidently a great potential supply of raw material in small trees awaits the development of such markets.

- The pattern of timber cutting between private and public forest land ownerships (principally national forests) is changing. National forests contain more than two-thirds of the volume in sawtimber trees and, at the start of the inventory period, were supplying one-fourth of the total timber cut. By 1956, private lands were still supplying most of the cut but the national forests' share had risen to 38 percent. It is estimated that 40 to 50 percent of Idaho's cut of sawtimber in 1959 came from national forests.

Much of the responsibility for future development of the State's forests rests upon the national forests. Since they cover 71 percent of the commercial forest land, increasingly larger shares of Idaho's timber cut must come from these lands. This prospect has been recognized

for some time (not only in Idaho) and is a basic premise of the Forest Service's "Program for the National Forests" (18). The cut from national forests has been increased substantially, but the principal deterrent to more rapid increases has been, and is, the combined difficulty and cost of constructing adequate access roads in rugged topography.

- The cut from several of Idaho's timber species has shifted significantly in the last two decades. The principal changes have involved western white pine, ponderosa pine, Douglas-fir, Engelmann spruce, and the true firs. Two of these—western white pine and ponderosa pine—have carried a disproportionately large share of the lumber cut during most of Idaho's history. From 1913 to 1940 more than 40 percent of the State's lumber output was western white pine. Ponderosa pine has never been cut as heavily as white pine but, between 1900 and the late 1940's, 25 to 40 percent of the total cut was ponderosa pine. The accumulated pressures of this heavy cutting, aggravated by losses to fire, insects, and diseases were undoubtedly largely responsible for the downward adjustments in lumber output for these species after 1940. By 1956, the cut from each was nearly proportional to its percentage of all sawtimber volume.

Percentages of sawtimber board-foot volume and sawtimber cut by species for selected years, 1946-56

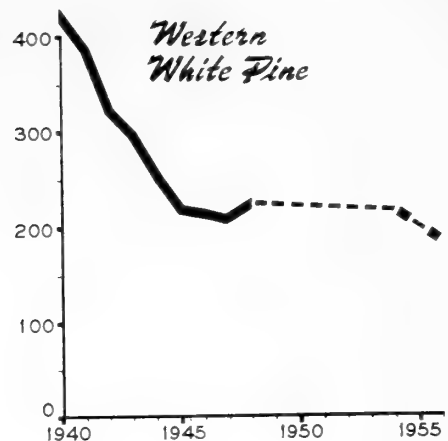
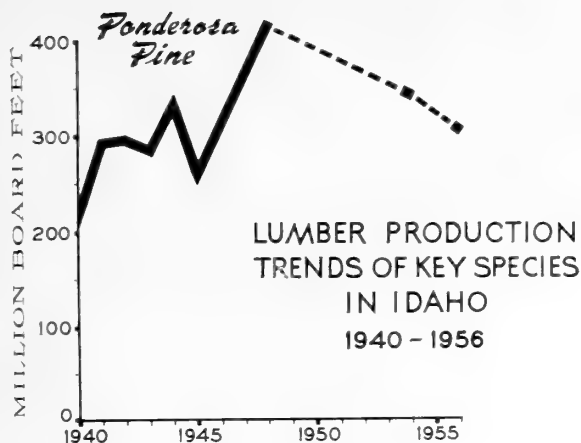
| Species                   | Percent of sawtimber board-foot volume | Percent of sawtimber cut |                              |       |
|---------------------------|--|--------------------------|------------------------------|-------|
|                           |  | 1946                     | 1946-54 average <sup>1</sup> | 1956  |
| Western white pine        | 12                                     | 30                       | 22                           | 14    |
| Ponderosa pine            | 17                                     | 32                       | 25                           | 18    |
| Douglas-fir               | 32                                     | 15                       | <sup>2</sup> 29              | 24    |
| Western larch             | 5                                      | 9                        |                              | 8     |
| True firs <sup>3</sup>    | 17                                     | 10                       | 12                           | 18    |
| Engelmann spruce          | 8                                      | 1                        | 8                            | 12    |
| Other                     | 9                                      | 3                        | 4                            | 6     |
| Total                     | 100                                    | 100                      | 100                          | 100   |
| Total volume <sup>4</sup> | 114,954                                | 970                      | 1,285                        | 1,905 |

<sup>1</sup> Average for 1946, 1952, and 1954 cut for western white pine, ponderosa pine, and Douglas-fir—larch; average of 1946 and 1954 cut for other species.

<sup>2</sup> Data for Douglas-fir and western larch not separable for 1952 and 1954.

<sup>3</sup> Grand, white, and subalpine firs.

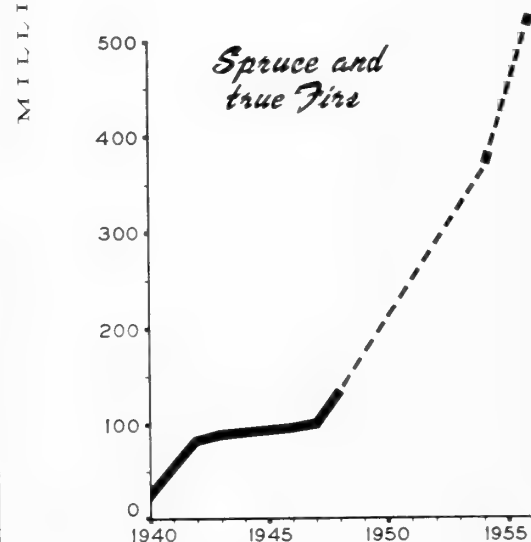
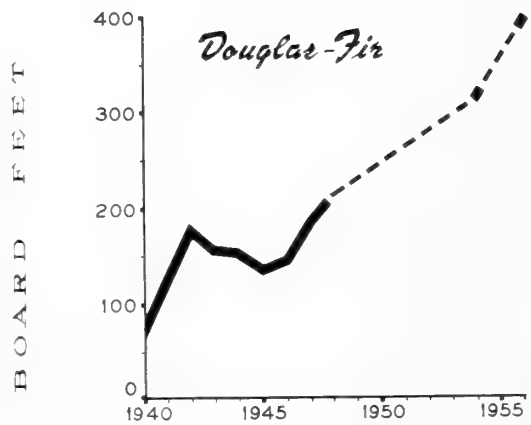
<sup>4</sup> Millions of board feet, International  $\frac{3}{4}$ -inch rule.



Despite declines in production of these major species, total lumber output increased from 780 million board feet to 1,609 million board feet between 1945 and 1956, and reached 1,802 million board feet in 1959. Achievement of this spectacular increase required remarkable gains from other species, notably Douglas-fir, Engelmann spruce, and the true firs—species whose cutting rates had been comparatively low. Although the cut from spruce during this period was boosted by the bark-beetle salvage and sales program, it appears now that spruce has gained a solid place in the lumber markets.

The acceptance of the so-called "associated" species has helped to take some of the pressure off of western white pine and ponderosa pine and has distributed the cut among the State's timber species more in line with their respective percentages of total sawtimber volume than it had been in the 1940's and earlier. This trend has implications for both timber management and forest industry. It frees industry from dependence upon a few key species and, by broadening potential supplies, provides room for industry expansion. For the forest manager it helps solve the problem of an outlet for the associated species and increases his opportunities for choosing among management alternatives.

- The rapid increase in timber cutting over the past several years indicates the overall growth and widened markets for Idaho's forest indus-



tries. In connection with this increase there were several significant changes: (a) sawmills became fewer but larger; (b) forest industries began to diversify—Idaho's first pulp mills, veneer plants, and particle board plant came into existence after 1947; (c) new supply sources were opened up — the production of pulpwood and commercial poles from southeastern Idaho, for example. The use of chipped sawmill residues for pulpwood was also a development with significance for both wood utilization and timber management.

Since 1947, the trend toward fewer but larger sawmills in Idaho has been noticeable. In 1947, 388 operating mills had an average annual lumber production of 2.45 million board feet. By 1956, active mills numbered 311 and output averaged 5.17 million board feet. Seventeen were producing at the rate of 10 million board feet or more per year in 1947, but there were 37 such mills in 1956.

In 1947, Idaho had no veneer plants, but one was under construction soon after. By 1955, there were two such plants—both in northern Idaho and both operated in connection with sawmills—to provide a higher level of utilization for the better quality logs of western white pine, ponderosa pine, western redcedar, and western larch.

Idaho had no pulp mills in 1947, but in 1950, the first of two Potlatch Forests, Inc. pulp units began producing at Lewiston. The second unit went into production in 1958.

Pulpwood production increased from about 39,000 cords in 1948 (1) to nearly 96,000 cords by 1954 (20). Part of this increase was due to new markets in the Lake States region that began to take pulpwood from southeastern Idaho in 1953. This was an especially encouraging development for timber management in this area because it permitted a start toward inten-

sified management of the extensive, but previously bypassed, stands of lodgepole pine. By 1956, output for the State had jumped to more than 227,000 cords—an increase of 137 percent over 1954 production (24). Production from roundwood has since declined from the 1956 level, but how much of the decline is due to temporary economic conditions and how much is due to shifts to chipped sawmill residues cannot be determined from present information.

Use of chipped sawmill residues for pulping started after the 1947-54 inventory period and has grown rapidly. About two-thirds of the pulpwood receipts of the Potlatch units are chipped residues,<sup>11</sup> and some southern Idaho sawmills are supplying chips to the Boise Cascade Kraft Corporation plant in southeastern Washington.

Idaho's single particle board plant—the only one in the Mountain States—has been operating since 1955. Particle board plants use sawmill residues for raw material and can be operated efficiently at lower supply levels than pulp mills.

Although some poles have been produced in southern Idaho for a number of years, Idaho's commercial pole industry is centered in the northern subunit. Northern Idaho is a leading production area for the highly regarded western redcedar utility poles and produces a considerable number of western larch poles. Two other species that afford an abundant potential source of poles, Douglas-fir and lodgepole pine, are still practically untouched. Southern Idaho's extensive lodgepole pine stands supply about 8,000 poles a year—the merest hint of their potential output.

<sup>11</sup> Western Conservation Journal 16(6). 1959

| Lumber production by sawmill size classes, 1947 and 1956 |          |            |          |            |
|--|----------|------------|----------|------------|
| Sawmill size class<br>(M bd. ft. per year)               | 1947     |            | 1956     |            |
|  | Active   | Lumber     | Active   | Lumber     |
|  | sawmills | production | sawmills | production |
|  | Number   | Percent    | Number   | Percent    |
| Less than 500  | 237      | 3          | 139      | 1          |
| 500 to 999   | 51       | 4          | 27       | 1          |
| 1,000 to 4,999   | 61       | 15         | 80       | 13         |
| 5,000 to 9,999   | 22       | 16         | 28       | 12         |
| 10,000 and over  | 17       | 62         | 37       | 73         |
| Total  | 388      | 100        | 311      | 100        |

# REFERENCES

- (1) Dickerman, M. B.  
1949. Pulpwood production on the increase. U.S. Forest Serv. North. Rocky Mountain Forest and Range Expt. Sta. Res. Note 73, 1 p.
- (2) \_\_\_\_\_  
1949. Lumber production tops 24-year record in northern region. U.S. Forest Serv. North. Rocky Mountain Forest and Range Expt. Sta. Res. Note 75, 5 pp.
- (3) Hutchison, S. Blair.  
1957. Market prospects for Mountain States timber. U.S. Forest Serv. Intermountain Forest and Range Expt. Sta. Res. Paper 50, 28 pp., illus.
- (4) \_\_\_\_\_ and R. K. Winters.  
1942. Northern Idaho forest resources and industries. U.S. Dept. Agr. Misc. Pub. 508, 75 pp., illus.
- (5) Pissot, Henry J.  
1953. Forest resources of north Idaho. U.S. Forest Serv. North. Rocky Mountain Forest and Range Expt. Sta. Station Paper 35, 37 pp., illus.
- (6) Steer, Henry B.  
1948. Lumber production in the United States, 1799-1946. U.S. Dept. Agr. Misc. Pub. 669, 233 pp.
- (7) U.S. Bureau of the Census.  
1949. Census of manufactures, 1947: Lumber and timber basic products, Bul. MC-24A, 21 pp.
- (8) U.S. Bureau of the Census.  
1951. Facts for industry: Lumber production and mill stocks 1949. Series M13G-09, 7 pp.
- (9) \_\_\_\_\_  
1952. Facts for industry: Lumber production and mill stocks 1950. Series M13G-07, 28 pp.
- (10) \_\_\_\_\_  
1955. Facts for industry: Lumber production and mill stocks 1953 and 1952. Series M13G-03, 11 pp.
- (11) \_\_\_\_\_  
1957. 1954 Census of manufactures: Lumber and timber basic products, Bul. MC-24A, 22 pp.
- (12) \_\_\_\_\_  
1958. Facts for industry: Lumber production and mill stocks 1955. Series M24T-05, 9 pp.
- (13) \_\_\_\_\_  
1958. Facts for industry: Lumber production and mill stocks 1956. Series M24T-06, 8 pp.
- (14) \_\_\_\_\_  
1959. Facts for industry: Lumber production and mill stocks 1957. Series M24T-07, 9 pp.
- (15) \_\_\_\_\_  
1961. Current industrial reports: Lumber production and mill stocks 1959 and 1958. Series M24T(59)-1, with supplement, 9 pp.
- (16) U.S. Forest Service.  
1950. Lumber production in the western states and Alaska, 1948. Unnumbered (mimeo.), 3 pp.
- (17) \_\_\_\_\_  
1958. Timber resources for America's future. U.S. Dept. Agr. Forest Resource Rpt. 14, 713 pp., illus.
- (18) \_\_\_\_\_  
1959. Program for the national forests. U.S. Dept. Agr. Misc. Pub. 794, 26 pp., illus.
- (19) Wikstrom, J. H.  
1954. 1952 log production for lumber and veneer. U.S. Forest Serv. North. Rocky Mountain Forest and Range Expt. Sta. Res. Note 136, 3 pp.

- (20) \_\_\_\_\_  
1955. Pulpwood production in Idaho and Montana, 1954. U.S. Forest Serv. Intermountain Forest and Range Expt. Sta. Res. Note 21, 2 pp.
- (21) **Wilson, Alvin K.**  
1957. Northern Rocky Mountain pole production continues climb in 1956. U.S. Forest Serv. Intermountain Forest and Range Expt. Sta. Res. Note 49, 4 pp.
- (22) \_\_\_\_\_  
1958. Idaho lumber production, 1956 U.S. Forest Serv. Intermountain Forest and Range Expt. Sta. Forest Survey Release 1, 8 pp.
- (23) \_\_\_\_\_  
1958. Log production in Idaho and Montana, 1956. U.S. Forest Serv. Intermountain Forest and Range Expt. Sta. Res. Note 54, 7 pp.
- (24) \_\_\_\_\_  
1958. Pulpwood production in Idaho and Montana, 1956. U. S. Forest Serv. Intermountain Forest and Range Expt. Sta. Res. Note 55, 3 pp.



## **APPENDIX**

# TERMINOLOGY

## Forest Land

*Forest land* includes (a) land that is at least 10-percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10-percent stocking and which has not been developed for other use; (c) afforested areas.

At the time the field work for this report was performed, the minimum area for forest land classification was 10 acres with a minimum width of 120 feet.

The principal classes of forest land are:

*Commercial forest land:* Forest land that is (a) producing, or is physically capable of producing, usable crops of wood (usually sawtimber), (b) is economically available now or prospectively, and (c) is not withdrawn from timber utilization.

*Noncommercial forest land:* Forest land that is (a) withdrawn from timber utilization through statute, ordinance, or administrative order but otherwise qualifies as commercial forest land; and (b) is incapable of yielding usable wood products (usually sawtimber) because of adverse site conditions, or is so physically inaccessible as to be unavailable economically in the foreseeable future.

## Forest Types

*Western white pine:* During the period of field work for this report (1947-51 in northern Idaho, where all of Idaho's western white pine occurs), the western white pine type included forests in which 20 percent or more of the stand was western white pine.

*Western redcedar*  
*Ponderosa pine*  
*Western larch*  
*Douglas-fir*  
*Hemlock*  
*Lodgepole pine*  
*Whitebark and limber pine*  
*Engelmann spruce*  
*Grand fir*  
*Subalpine fir*

Forests in which 50 percent or more of the stand is in the species for which the type is named and less than 20 percent of the stand is western white pine.

*Hardwoods:* Forests in which 50 percent or more of the stand is aspen, cottonwood, or other western hardwood species, and less than 20 percent of the stand is western white pine.

## Tree Classes

*Sawtimber trees:* Trees of commercial species that contain at least one merchantable 16-foot sawlog and are 11.0 inches or larger in diameter at breast height (d.b.h.).

*Poletimber trees:* Trees of commercial species that are 5.0 inches d.b.h. or larger and meet regional specifications for soundness and form but do not meet the specifications for sawtimber trees.

*Seedling and sapling trees:* Trees of commercial species that are smaller than 5.0 inches d.b.h.

*Growing stock trees:* Sawtimber trees, pole-timber trees, saplings, and seedlings, i.e., all live trees except cull trees.

*Note:* In discussion and tables on volumes, growth, and mortality, the term *growing stock* refers only to sawtimber trees and poletimber trees, i.e., all trees 5.0 inches d.b.h. and larger (except cull trees). Saplings and seedlings are not part of growing stock in this usage of the term.

*Cull trees:* Live trees of sawtimber or poletimber size that are unmerchantable for sawlogs now or prospectively because of defect, rot, or species. *Rotten cull trees* fail to meet regional specifications for the proportion of sound volume to total volume. *Sound cull trees* do meet regional specifications for freedom from rot but cannot produce even one merchantable sawlog, now or prospectively (according to regional specifications) because of roughness, poor form, or species.

## Stand-size Classes

*Sawtimber stands* have a minimum net volume per acre of 1,500 board feet, International  $\frac{1}{4}$ -inch rule.

*Poletimber stands* fail to meet the sawtimber stand specification, but are at least 10-percent stocked with poletimber and larger (5.0 inches d.b.h. and larger) trees and have at least half the minimum stocking in poletimber trees.

*Seedling and sapling stands* do not qualify as either sawtimber or poletimber stands, but have at least 10-percent stocking of trees of commercial species and have at least half the minimum stocking in seedling and sapling trees.

*Nonstocked areas* are areas that do not qualify as sawtimber, poletimber, or seedling and sapling stands.

## Stocking

*Stocking* refers to the extent to which growing space is effectively utilized by present or potential growing stock trees of commercial species. *Degree of stocking* is synonymous with *percent of growing space occupied* and means the ratio of actual stocking to full stocking for comparable sites and stands. In this report it is expressed as the percentage of the available space occupied by tree crowns.

*Well-stocked stands* have 70-percent or more coverage by tree crowns.

*Medium-stocked stands* have 40- to 70-percent coverage by tree crowns.

*Poorly stocked stands* have 10- to 40-percent coverage by tree crowns.

*Nonstocked areas* are less than 10-percent stocked with present or potential growing stock trees.

## Volume

*All-timber volume:* Net volume in cubic feet of live and salvable dead sawtimber trees and poletimber trees of commercial species, and cull trees of all species, from stump to a minimum 4.0-inch top inside bark. Includes bole only of softwoods but both bole and limbs of hardwoods to a minimum 4.0-inch diameter inside bark.

*Growing stock volume:* Net volume in cubic feet of live sawtimber trees and live poletimber trees from stump to a minimum 4.0-inch top (of central stem) inside bark.

*Live sawtimber volume:* Net volume in board feet, International  $\frac{1}{4}$ -inch rule, of live sawtimber trees.

## Growth

*Net annual growth of sawtimber:* The average annual change, calculated from the total change over a 10-year period, in net board-foot volume of live sawtimber on commercial forest land resulting from natural causes exclusive of catastrophic losses.

*Net annual growth of growing stock:* The average annual change, calculated from the total change over a 10-year period, in net cubic-foot volume of growing stock on commercial forest land resulting from natural causes exclusive of catastrophic losses.

## Mortality

*Net annual mortality of sawtimber or growing stock:* The average annual net board-foot or cubic-foot volume removed from live sawtimber or growing stock through death from natural causes, calculated from the total net volume removed by such causes over a 10-year period.

## Timber Cut

*Timber cut from growing stock:* The volume of sound wood in live sawtimber and pole-timber trees cut for forest products during a specified period, including both roundwood products and logging residues.

*Timber cut from sawtimber:* The net board-foot volume of live sawtimber trees cut for forest products during a specified period, including both roundwood products and logging residues.

*Logging residues from growing stock:* The net cubic-foot volume of live sawtimber and poletimber trees cut or killed by logging on commercial forest land and not converted to timber products.

*Allowable cut:* The volume of timber that would be cut on commercial forest land during a given period under specified management plans for sustained production, such as those in effect on national forests.

## Principal Tree Species

### a. Softwoods

|                     |                              |
|---------------------|------------------------------|
| Douglas-fir         | <i>Pseudotsuga menziesii</i> |
| Fir, subalpine      | <i>Abies lasiocarpa</i>      |
| Fir, grand          | <i>A. grandis</i>            |
| Fir, white          | <i>A. concolor</i>           |
| Hemlock, mountain   | <i>Tsuga mertensiana</i>     |
| Hemlock, western    | <i>T. heterophylla</i>       |
| Larch, western      | <i>Larix occidentalis</i>    |
| Pine, limber        | <i>Pinus flexilis</i>        |
| Pine, lodgepole     | <i>P. contorta</i>           |
| Pine, ponderosa     | <i>P. ponderosa</i>          |
| Pine, western white | <i>P. monticola</i>          |
| Pine, whitebark     | <i>P. albicaulis</i>         |
| Redcedar, western   | <i>Thuja plicata</i>         |
| Spruce, Engelmann   | <i>Picea engelmannii</i>     |

### b. Hardwoods

|                   |                            |
|-------------------|----------------------------|
| Aspen, quaking    | <i>Populus tremuloides</i> |
| Cottonwood, black | <i>P. trichocarpa</i>      |
| Birch, paper      | <i>Betula papyrifera</i>   |

# FOREST SURVEY PROCEDURES

## Inventory

In the initial Forest Survey of northern Idaho, made between 1932 and 1937, forest and nonforest land boundaries were delineated on base maps from cruise data, county assessment records, cutting and fire records, and other available sources. Forest land was further delineated by type, stand-size, stocking, age, and site classes. Additional stand characteristics such as age were determined by field checking. The area in each cover class was determined from the maps and summarized by types, stand-size classes, stocking classes, age classes, and site classes for each ownership class and county. Timber volume was estimated for each delineated forest land subdivision from cruise data, field samples, and normal yield data correlated with type, stocking, age, and site classes.

The second survey of northern Idaho, which furnished data for this report, was made between 1947 and 1951 and used sampling procedures to obtain adjustment factors for updating the initial survey data. Except in Idaho and Benewah Counties, the areas of forest and nonforest land (and the subclasses of forest land) were obtained by correlating initial survey classifications with field data from sample transects (strips). These transects were taken in the vicinity of Land Office section corners spaced at 4-mile intervals. Groups of three 1/5-acre plots at each of these Land Office section corners supplied volume data. Since Benewah County had been resurveyed in 1943-44, a 6-year adjustment for cutting and growth was applied to the resurvey data to update Benewah County statistics. In the second survey of Idaho County, a new cover type map was made by field use of aerial photographs, and volume estimates were obtained from plots near section corners on a 4-mile grid spacing as was done in most of the northern Idaho counties, except that two, instead

of three, grouped 1 5-acre plots were used. Aerial photographs were used principally as aids in finding the selected section corners and to provide a record for future reexamination of the field locations.

Data for southern Idaho for this report were obtained from joint Forest Survey and national forest timber management surveys conducted between 1950 and 1954. This was the initial inventory survey of the southern subunit of the State. For the central and southeastern portion of the subunit (from the Salmon and Challis National Forests east), the 4-mile grid pattern as used in northern Idaho was applied with three principal exceptions: (a) transects were not used, (b) a "location" (cluster of plots) consisted of two plots rather than three, and (c) aerial photographs were used in preliminary and field type mapping as well as for finding section corners, and as a location record. In southwestern Idaho, however, the national forest timber management survey of the Boise, Payette, and part of the Sawtooth National Forests was a separate project where techniques that had not previously been used in Idaho were applied. Locations consisted of clusters of two or three ground plots, as elsewhere in Idaho, but were distributed randomly instead of systematically; this was later modified to stratified random sampling, with heaviest sampling in the economically most important forest types and stand-size classes. More intensive use of experienced photo interpreters was also made in delineating forest types on photographs than had been done previously in Idaho.

Growth and mortality data were obtained on the field plots. For growth rates, increment borings were made in sample trees to determine radial growth for the 10-year period preceding the plot examination; the radial growth measurements were then translated into average annual volume growth. Mortality data were derived from a tally of dead trees on the field

plots. Ten-year mortality estimates were used with the 10-year growth measurements to provide an average annual net growth estimate.

## Timber Cut

Estimation of timber cut may be based on output data for a single year if that year is considered to be typical of the period during which the Forest Survey was conducted. Average primary product output and average logging residues figures based on periodic surveys of the forest industries are usually preferable. Lumber industry surveys, conducted in cooperation with the Bureau of the Census, provide both lumber production and log receipts data for estimating the predominant part of the timber cut. Periodic surveys are also conducted to determine the output of pulpwood, commercial poles, fuelwood, mine timbers, posts, and miscellaneous timbers of lesser importance. Data for estimating the volume of logging residues are obtained by special studies on active woods operations.

## Accuracy of Estimates

Statistical analysis of area and volume data for each State subunit and for the State as a whole provide the following data for sampling errors:<sup>12</sup>

<sup>12</sup> At one standard deviation. At this level, chances are two out of three that the results obtained do not differ from the results that would have been obtained by 100-percent coverage by more than the percentage shown.

| Unit           | All forest land |         | Commercial forest land |         | Noncommercial forest land |         | Growing stock volume |         |
|----------------|-----------------|---------|------------------------|---------|---------------------------|---------|----------------------|---------|
|                | Thousand acres  | Percent | Thousand acres         | Percent | Thousand acres            | Percent | Million cu. ft.      | Percent |
| Northern Idaho | ± 116           | ± 1.1   | ± 78                   | ± 1.0   | ± 86                      | ± 3.5   | ± 233                | ± 1.8   |
| Southern Idaho | ± 140           | ± 1.2   | ± 114                  | ± 1.4   | ± 82                      | ± 2.3   | ± 230                | ± 1.8   |
| Idaho          | ± 182           | ± .8    | ± 138                  | ± .9    | ± 118                     | ± 2.0   | ± 327                | ± 1.3   |

Sampling errors are inherent in the process of estimating a total from a sample fraction of the total and, as such, can be evaluated mathematically. Estimates of sampling error, however, do not include errors that arise from mistakes in judgment, measurement, recording, transcribing, faulty equipment, and similar sources. Careful training in and close supervision of all phases of field and office work are employed to keep these reporting errors to a minimum.

Since the estimation of timber cut requires combining data from a number of independent surveys, no comprehensive sampling error for total timber cut can be computed. However, since lumber production in Idaho accounts for about 94 percent of the total timber cut, the sampling errors for the lumber production and sawlog receipts surveys for 1956 (22, 23) are indicative of the timber cut sampling error. The sampling error for 1956 lumber production in Idaho was 0.86 percent and the sampling error for sawlog receipts was 0.92 percent, at one standard deviation.

# APPENDIX TABLES

## I. Standard Summary Tables (Nos. 1-10)

Table 1.—Land area by major classes of land,  
Idaho, 1954

| Class of land             | Area                  |
|---------------------------|-----------------------|
|                           | <i>Thousand acres</i> |
| Forest:                   |                       |
| Commercial                | 15.823                |
| Noncommercial:            |                       |
| Productive-reserved       | 1.867                 |
| Unproductive <sup>1</sup> | 4.125                 |
| Total                     | 21.815                |
| Nonforest: <sup>2</sup>   | 31.157                |
| Total, all classes        | 52.972                |

<sup>1</sup> Includes 971,000 acres withdrawn for special uses.

<sup>2</sup> Includes 67,000 acres of water according to survey standards of area classification but defined by the Bureau of the Census as land.

Table 3.—Area of commercial forest land, by  
major forest types, Idaho, 1954

| Forest type                     | Area                  |
|---------------------------------|-----------------------|
|                                 | <i>Thousand acres</i> |
| Douglas-fir                     | 4,798                 |
| Hemlock                         | 167                   |
| Ponderosa pine                  | 2,624                 |
| Western white pine <sup>1</sup> | 2,178                 |
| Lodgepole pine <sup>2</sup>     | 3,023                 |
| Larch                           | 730                   |
| Spruce-fir                      | 1,755                 |
| Hardwoods                       | 548                   |
| Total, all types                | 15.823                |

<sup>1</sup> Includes 258,000 acres of western red-cedar type.

<sup>2</sup> Includes 25,000 acres of whitebark and limber pine types.

Table 2.—Commercial forest land area, by ownership and stand-size classes,  
Idaho, 1954

| Ownership class             | Total  | Sawtimber<br>stands   | Pole-<br>timber<br>stands | Seedling<br>and<br>sapling<br>stands | Non-<br>stocked<br>and other<br>areas <sup>1</sup> |
|-----------------------------|--------|-----------------------|---------------------------|--------------------------------------|--|
|                             |        |                       |                           |                                      |  |
|                             |        | <i>Thousand acres</i> |                           |                                      |  |
| Federally owned or managed: |        |                       |                           |                                      |  |
| National forest             | 11,310 | 6,380                 | 2,845                     | 1,022                                | 1,063  |
| Indian                      | 102    | 45                    | 30                        | 12                                   | 15   |
| Bureau of Land Mgmt.        | 404    | 204                   | 123                       | 36                                   | 41   |
| Other                       | 1      | 1                     | ( <sup>2</sup> )          | ( <sup>2</sup> )                     | ( <sup>2</sup> )                                   |
| Total                       | 11,817 | 6,630                 | 2,998                     | 1,070                                | 1,119  |
| State:                      | 940    | 593                   | 171                       | 96                                   | 80   |
| Private: <sup>3</sup>       |        |                       |                           |                                      |  |
| Farm                        | 1,229  | 436                   | 491                       | 179                                  | 123  |
| Industrial & other          | 1,837  | 1,082                 | 251                       | 253                                  | 251  |
| Total                       | 3,066  | 1,518                 | 742                       | 432                                  | 374  |
| Total, all ownerships       | 15.823 | 8.741                 | 3.911                     | 1.598                                | 1.573  |

<sup>1</sup> Includes areas not classified elsewhere.

<sup>2</sup> Less than 0.5 thousand acres.

<sup>3</sup> Includes a negligible amount of county and municipal ownership.

Table 4.—Net volume of live sawtimber and growing stock on commercial forest land by stand-size class, Idaho, 1954

| Stand-size class  | Sawtimber                              | Growing stock              |
|---|--|----------------------------|
|   | <i>Million<br/>bd.-ft.<sup>1</sup></i> | <i>Million<br/>cu. ft.</i> |
| Sawtimber stands  | 109,785                                | 20,952                     |
| Poletimber stands   | 4,521                                  | 4,661                      |
| Seedling-sapling stands                                   | 356                                    | 264                        |
| Nonstocked and other<br>areas not elsewhere<br>classified | 292                                    | 68                         |
| Total, all stands   | 114,954                                | 25,945                     |

<sup>1</sup> International 1/4-inch log rule.

Table 5.—Net volume of live sawtimber and growing stock on commercial forest land by ownership class, Idaho, 1954

| Ownership class             | Sawtimber                              | Growing stock              |
|-----------------------------|--|----------------------------|
|                             | <i>Million<br/>bd.-ft.<sup>1</sup></i> | <i>Million<br/>cu. ft.</i> |
| Federally owned or managed: |  |                            |
| National forest             | 80,532                                 | 18,531                     |
| Indian                      | 388                                    | 104                        |
| Bureau of Land Mgmt.        | 2,158                                  | 545                        |
| Other                       | 2                                      | 1                          |
| Total                       | 83,080                                 | 19,181                     |
| State                       | 9,433                                  | 1,915                      |
| Private: <sup>2</sup>       |  |                            |
| Farm                        | 5,860                                  | 1,485                      |
| Industrial & other          | 16,581                                 | 3,364                      |
| Total                       | 22,441                                 | 4,849                      |
| Total, all ownerships       | 114,954                                | 25,945                     |

<sup>1</sup> International 1/4-inch log rule.

<sup>2</sup> Includes a negligible volume in county and municipal ownership.

Table 6.—Net volume of live sawtimber and growing stock on commercial forest land, by species, Idaho, 1954

| Species                | Sawtimber                              | Growing stock              |
|------------------------|--|----------------------------|
|                        | <i>Million<br/>bd.-ft.<sup>1</sup></i> | <i>Million<br/>cu. ft.</i> |
| Softwoods:             |  |                            |
| Douglas-fir            | 36,587                                 | 7,665                      |
| Ponderosa pine         | 19,297                                 | 3,236                      |
| True firs <sup>2</sup> | 19,214                                 | 4,223                      |
| Western hemlock        | 2,113                                  | 488                        |
| Western white pine     | 13,381                                 | 2,389                      |
| Engelmann spruce       | 9,635                                  | 1,790                      |
| Western larch          | 6,110                                  | 1,333                      |
| Western redcedar       | 3,098                                  | 740                        |
| Lodgepole pine         | 4,816                                  | 3,694                      |
| Other softwoods        | 387                                    | 134                        |
| Total                  | 114,638                                | 25,692                     |
| Hardwoods:             |  |                            |
| Aspen                  | 75                                     | 189                        |
| Other hardwoods        | 241                                    | 64                         |
| Total                  | 316                                    | 253                        |
| Total, all species     | 114,954                                | 25,945                     |

<sup>1</sup> International 1/4-inch log rule.

<sup>2</sup> Grand, subalpine, and white firs.



**Table 7.—Net volume of live sawtimber on commercial forest land by diameter class groups and species, Idaho, 1954**

| Species                | Diameter class groups (inches)  |           |           |               | Total   |
|------------------------|---------------------------------|-----------|-----------|---------------|---------|
|                        | 11.0-20.9                       | 21.0-30.9 | 31.0-40.9 | 41.0 & larger |         |
| Softwoods:             | Million board feet <sup>1</sup> |           |           |               |         |
| Douglas-fir            | 18,560                          | 12,654    | 4,026     | 1,347         | 36,587  |
| Ponderosa pine         | 4,325                           | 7,124     | 5,953     | 1,895         | 19,297  |
| True firs <sup>2</sup> | 11,721                          | 5,815     | 1,450     | 228           | 19,214  |
| Western hemlock        | 1,544                           | 542       | 27        | 0             | 2,113   |
| Western white pine     | 7,015                           | 4,182     | 1,425     | 759           | 13,381  |
| Engelmann spruce       | 4,416                           | 4,084     | 1,014     | 121           | 9,635   |
| Western larch          | 3,203                           | 1,852     | 931       | 124           | 6,110   |
| Western redcedar       | 1,682                           | 990       | 320       | 106           | 3,098   |
| Lodgepole pine         | 4,647                           | 169       | 0         | 0             | 4,816   |
| Other softwoods        | 304                             | 55        | 28        | 0             | 387     |
| Total                  | 57,417                          | 37,467    | 15,174    | 4,580         | 114,638 |
| Hardwoods:             |                                 |           |           |               |         |
| Aspen                  | 75                              | 0         | 0         | 0             | 75      |
| Other hardwoods        | 169                             | 63        | 9         | 0             | 241     |
| Total                  | 244                             | 63        | 9         | 0             | 316     |
| Total, all species     | 57,661                          | 37,530    | 15,183    | 4,580         | 114,954 |

<sup>1</sup> International 1/4 -inch log rule.

<sup>2</sup> Grand, subalpine, and white firs.

**Table 8.—Net volume of all timber on commercial forest land, by class of material and species group, Idaho, 1954**

| Class of material         | Total  | Softwoods | Hardwoods |
|---------------------------|--------|-----------|-----------|
| <i>Million cubic feet</i> |        |           |           |
| Growing stock:            |        |           |           |
| Sawtimber trees:          |        |           |           |
| Sawlog portion            | 16,775 | 16,730    | 45        |
| Upper stem portion        | 2,084  | 2,068     | 16        |
| Total                     | 18,859 | 18,798    | 61        |
| Poletimber trees:         | 7,086  | 6,894     | 192       |
| Total, growing stock      | 25,945 | 25,692    | 253       |
| Other material:           |        |           |           |
| Sound cull trees          | 493    | 484       | 9         |
| Rotten cull trees         | 1,843  | 1,826     | 17        |
| Hardwood limbs            | 1      | 0         | 1         |
| Salvable dead trees       | 1,614  | 1,610     | 4         |
| Total, other material     | 3,951  | 3,920     | 31        |
| Total, all timber         | 29,896 | 29,612    | 284       |

Table 9.—Net annual growth, annual mortality, and annual cut of live sawtimber and growing stock on commercial forest land, by species groups, Idaho<sup>1</sup>

| Item                     | Sawtimber                              |           |                  | Growing stock             |           |                  |
|--------------------------|--|-----------|------------------|---------------------------|-----------|------------------|
|                          | Total                                  | Softwoods | Hardwoods        | Total                     | Softwoods | Hardwoods        |
|                          | <i>Million board feet</i> <sup>2</sup> |           |                  | <i>Million cubic feet</i> |           |                  |
| Net annual growth        | 1,646                                  | 1,636     | 10               | 469                       | 460       | 9                |
| Annual mortality         | 608                                    | 605       | 3                | 147                       | 145       | 2                |
| Annual cut: <sup>3</sup> |  |           |                  |                           |           |                  |
| Timber products          | 1,237                                  | 1,236     | 1                | 198                       | 198       | ( <sup>4</sup> ) |
| Logging residues         | 58                                     | 58        | ( <sup>4</sup> ) | 22                        | 22        | ( <sup>4</sup> ) |
| Total                    | 1,295                                  | 1,294     | 1                | 220                       | 220       | ( <sup>4</sup> ) |

<sup>1</sup> Data for growth and mortality as of 1954, timber cut data are averages computed for the 1947-54 period. (See footnote 3)

<sup>2</sup> International 1/4 -inch log rule.

<sup>3</sup> Bases for estimates: former Northern Rocky Mountain Forest and Range Expt. Station file records of sawmill log receipts and lumber production for 1946, 1948, and 1950; also Northern Rocky Mountain Station Paper 35; 1952 data of NRM Research Note 136, and Intermountain Forest and Range Experiment Station file data prepared for U.S.F.S. Forest Resource Report No. 14; 1956 data of IF&RES Research Note 54; and the Census Bureau's 1954 Census of Manufactures (Lumber and Timber Basic Products).

<sup>4</sup> Less than 0.5 million feet.

Table 10.—Output of timber products and annual cut of live sawtimber and growing stock, Idaho, 1956

| Product                    | Output of timber products |                        |                  |                     |            | Annual cut of sawtimber 1 |                                  |            | Annual cut of growing stock 1 |                     |            |    |
|----------------------------|---------------------------|------------------------|------------------|---------------------|------------|---------------------------|----------------------------------|------------|-------------------------------|---------------------|------------|----|
|                            | Volume in standard units  |                        | Roundwood volume |                     |            | Total                     | Soft-woods                       | Hard-woods | Total                         | Soft-woods          | Hard-woods |    |
|                            | Standard units            | Number                 | Total            | Soft-woods          | Hard-woods |                           |                                  |            |                               |                     |            |    |
| Sawlogs                    | }                         | M bd. ft. <sup>2</sup> | 1,873,700        | <i>M cubic feet</i> |            |                           | <i>M board-feet</i> <sup>2</sup> |            |                               | <i>M cubic feet</i> |            |    |
| Veneer logs and bolts      |                           |                        |                  | 274,676             | 274,645    | 31                        | 1,830,400                        | 1,830,061  | 339                           | 304,890             | 304,856    | 34 |
| Pulpwood logs              | "                         | 91,256                 | 13,436           | 13,329              | 107        | 51,740                    | 50,612                           | 1,128      | 8,482                         | 8,297               | 185        |    |
| Pulpwood bolts             | Std. cords <sup>3</sup>   | 423,317                | 2,005            | 2,005               | 0          | 6,062                     | 6,062                            | 0          | 2,005                         | 2,005               | 0          |    |
| Fuelwood                   | "                         | 5414,389               | 31,908           | 31,725              | 183        | 5,403                     | 5,372                            | 31         | 1,861                         | 1,850               | 11         |    |
| Poles                      | M pieces                  | 143                    | 2,579            | 2,579               | 0          | 6,077                     | 6,077                            | 0          | 3,038                         | 3,038               | 0          |    |
| Posts                      | "                         | 742                    | 602              | 602                 | 0          | 644                       | 644                              | 0          | 315                           | 315                 | 0          |    |
| Mine timbers               | M cu. ft.                 | 1,443                  | 1,443            | 1,443               | 0          | 3,746                     | 3,746                            | 0          | 1,563                         | 1,563               | 0          |    |
| Miscellaneous <sup>6</sup> | "                         | 71,258                 | 1,258            | 1,258               | 0          | 1,196                     | 1,196                            | 0          | 1,199                         | 1,199               | 0          |    |
| Total                      |                           |                        | 327,907          | 327,586             | 321        | 1,905,268                 | 1,903,770                        | 1,498      | 323,353                       | 323,123             | 230        |    |

<sup>1</sup> Logging residues for 1956 estimated at 85 million board feet for the total sawtimber cut and 32 million cubic feet for the total cut from growing stock.

<sup>2</sup> International 1/4 -inch rule.

<sup>3</sup> Rough wood basis.

<sup>4</sup> Not including mill residues used for pulp and hardboards.

<sup>5</sup> Not including mill residues used for domestic and industrial fuel.

<sup>6</sup> Includes shingle bolts, farm timbers, etc.

<sup>7</sup> Not including mill residues used for miscellaneous products.

## II. Supplementary Tables (Nos. 11-27)

Table 11.—Land area, by major land classes and State subunits, Idaho, 1954

| Land Class                      | State             |         | Northern          |         | Southern          |         |
|---------------------------------|-------------------|---------|-------------------|---------|-------------------|---------|
|                                 | Thousand<br>acres | Percent | Thousand<br>acres | Percent | Thousand<br>acres | Percent |
| Forest:                         |                   |         |                   |         |                   |         |
| Commercial                      | 15,823            | 29.9    | 7,760             | 100.0   | 8,063             | 100.0   |
| Noncommercial:                  |                   |         |                   |         |                   |         |
| Productive-reserved             | 1,867             | 3.5     | 932               | 100.0   | 935               | 100.0   |
| Unproductive                    | 4,125             | 7.8     | 1,534             | 100.0   | 2,591             | 100.0   |
| Total                           | 21,815            |         | 10,226            |         | 11,589            |         |
| Nonforest <sup>1</sup>          | 31,157            | 58.8    | 2,341             | 100.0   | 28,816            | 100.0   |
| Total, all classes <sup>2</sup> | 52,972            | 100.0   | 12,567            | 100.0   | 40,405            | 100.0   |

<sup>1</sup> Includes 67,000 acres of water according to Survey standards of area classification, but defined by the Bureau of Census as land.

<sup>2</sup> From U.S. Bureau of Census: Land and Water Area of the United States, 1950.

Table 12.—Commercial forest land area, by ownership classes and State subunits, Idaho, 1954

| Ownership class             | State             |         | Northern          |         | Southern          |         |
|-----------------------------|-------------------|---------|-------------------|---------|-------------------|---------|
|                             | Thousand<br>acres | Percent | Thousand<br>acres | Percent | Thousand<br>acres | Percent |
| Federally owned or managed: |                   |         |                   |         |                   |         |
| National forest             | 11,310            | 71.5    | 4,418             | 100.0   | 6,892             | 100.0   |
| Indian                      | 102               | .6      | 74                | 100.0   | 28                | 100.0   |
| Bureau of Land Mgmt.        | 404               | 2.6     | 162               | 100.0   | 242               | 100.0   |
| Other                       | 1                 | --      | 0                 | 100.0   | 1                 | 100.0   |
| Total                       | 11,817            |         | 4,654             |         | 7,163             |         |
| State                       | 940               | 5.9     | 631               | 100.0   | 309               | 100.0   |
| Private: <sup>1</sup>       |                   |         |                   |         |                   |         |
| Farm                        | 1,229             | 7.8     | 851               | 100.0   | 378               | 100.0   |
| Industrial and other        | 1,837             | 11.6    | 1,624             | 100.0   | 213               | 100.0   |
| Total                       | 3,066             |         | 2,475             |         | 591               |         |
| Total, all ownerships       | 15,823            | 100.0   | 7,760             | 100.0   | 8,063             | 100.0   |

<sup>1</sup> Includes a negligible amount of county and municipal ownership.

Table 13.—Commercial forest land area, by stand-size classes and State subunits, Idaho, 1954

| Stand-size class              | State             |         | Northern          |         | Southern          |         |
|-------------------------------|-------------------|---------|-------------------|---------|-------------------|---------|
|                               | Thousand<br>acres | Percent | Thousand<br>acres | Percent | Thousand<br>acres | Percent |
| Sawtimber stands              | 8,741             | 55.3    | 3,521             | 45.4    | 5,220             | 64.7    |
| Poletimber stands             | 3,911             | 24.7    | 1,891             | 24.4    | 2,020             | 25.1    |
| Seedling-sapling<br>stands    | 1,598             | 10.1    | 1,164             | 15.0    | 434               | 5.4     |
| Nonstocked and<br>other areas | 1,573             | 9.9     | 1,184             | 15.2    | 389               | 4.8     |
| Total, all classes            | 15,823            | 100.0   | 7,760             | 100.0   | 8,063             | 100.0   |

Table 14.—Commercial forest land area, by major forest types and State subunits, Idaho, 1954

| Forest type                     | State                     |                | Northern                  | Southern |
|---------------------------------|---------------------------|----------------|---------------------------|----------|
|                                 | <i>Thousand<br/>acres</i> | <i>Percent</i> | <i>Thousand<br/>acres</i> |          |
| Western white pine group:       |                           |                |                           |          |
| Western white pine <sup>1</sup> | 1,920                     | 12.1           | 1,920                     | 0        |
| Western redcedar                | 258                       | 1.6            | 258                       | 0        |
| Total                           | 2,178                     |                | 2,178                     | 0        |
| Ponderosa pine                  | 2,624                     | 16.6           | 1,109                     | 1,515    |
| Western larch                   | 730                       | 4.6            | 724                       | 6        |
| Douglas-fir                     | 4,798                     | 30.3           | 1,286                     | 3,512    |
| Hemlock <sup>2</sup>            | 167                       | 1.1            | 165                       | 2        |
| Lodgepole pine group:           |                           |                |                           |          |
| Lodgepole pine                  | 2,998                     | 18.9           | 1,209                     | 1,789    |
| Whitebark and limber pines      | 25                        | .2             | ( <sup>3</sup> )          | 25       |
| Total                           | 3,023                     |                | 1,209                     | 1,814    |
| Spruce-fir group:               |                           |                |                           |          |
| Engelmann spruce                | 463                       | 2.9            | 214                       | 249      |
| Grand fir                       | 874                       | 5.5            | 825                       | 49       |
| Subalpine fir                   | 418                       | 2.7            | 0                         | 418      |
| Total                           | 1,755                     |                | 1,039                     | 716      |
| Hardwoods <sup>4</sup>          | 548                       | 3.5            | 50                        | 498      |
| Total, all types                | 15,823                    | 100.0          | 7,760                     | 8,063    |

<sup>1</sup> The white pine type requires 20 percent or more volume plurality in the white pine species; all other types require 50 percent volume plurality in the characteristic species.

<sup>2</sup> Principally western hemlock type but includes mountain hemlock type.

<sup>3</sup> Less than 0.5 thousand acres.

<sup>4</sup> Predominantly aspen (482,000 acres).

Table 15.—Net board-foot volume<sup>1</sup> of live sawtimber on commercial forest land, by stand-size classes and State subunits, Idaho, 1954

| Stand-size class           | State                      |                | Northern                   |                | Southern                   |                |
|----------------------------|----------------------------|----------------|----------------------------|----------------|----------------------------|----------------|
|                            | <i>Million<br/>bd.-ft.</i> | <i>Percent</i> | <i>Million<br/>bd.-ft.</i> | <i>Percent</i> | <i>Million<br/>bd.-ft.</i> | <i>Percent</i> |
| Sawtimber stands           | 109,785                    | 95.5           | 58,143                     | 95.8           | 51,642                     | 95.2           |
| Poletimber stands          | 4,521                      | 3.9            | 2,133                      | 3.5            | 2,388                      | 4.4            |
| Seedling-sapling stands    | 356                        | .3             | 183                        | .3             | 173                        | .3             |
| Nonstocked and other areas | 292                        | .3             | 226                        | .4             | 66                         | .1             |
| Total, all classes         | 114,954                    | 100.0          | 60,685                     | 100.0          | 54,269                     | 100.0          |

<sup>1</sup> International 1/4 -inch log rule..

Table 16.—Net board-foot volume<sup>1</sup> of live sawtimber on commercial forest land,  
by ownership classes and State subunits, Idaho, 1954

| Ownership class             | State                         |                | Northern                      | Southern |
|-----------------------------|-------------------------------|----------------|-------------------------------|----------|
|                             | <i>Million<br/>board feet</i> | <i>Percent</i> | <i>Million<br/>board feet</i> |          |
| Federally owned or managed: |                               |                |                               |          |
| National forest             | 80,532                        | 70.1           | 33,333                        | 47,199   |
| Indian                      | 388                           | .3             | 310                           | 78       |
| Bureau of Land Mgmt.        | 2,158                         | 1.9            | 860                           | 1,298    |
| Other                       | 2                             | - -            | 0                             | 2        |
| Total                       | 83,080                        |                | 34,503                        | 48,577   |
| State                       | 9,433                         | 8.2            | 7,311                         | 2,122    |
| Private: <sup>2</sup>       |                               |                |                               |          |
| Farm                        | 5,860                         | 5.1            | 4,115                         | 1,745    |
| Industrial and other        | 16,581                        | 14.4           | 14,756                        | 1,825    |
| Total                       | 22,441                        |                | 18,871                        | 3,570    |
| Total, all ownerships       | 114,954                       | 100.0          | 60,685                        | 54,269   |

<sup>1</sup> International 1/4 -inch log rule.

<sup>2</sup> Includes a negligible volume in county and municipal ownership.

Table 17.—Net board-foot volume<sup>1</sup> of live sawtimber on commercial forest land,  
by species and State subunits, Idaho, 1954

| Species                      | State                         |                | Northern                      | Southern |
|------------------------------|-------------------------------|----------------|-------------------------------|----------|
|                              | <i>Million<br/>board feet</i> | <i>Percent</i> | <i>Million<br/>board feet</i> |          |
| Softwoods:                   |                               |                |                               |          |
| Western white pine           | 13,381                        | 11.6           | 13,381                        | 0        |
| Ponderosa pine               | 19,297                        | 16.8           | 6,931                         | 12,366   |
| Western larch                | 6,110                         | 5.3            | 5,553                         | 557      |
| Douglas-fir                  | 36,587                        | 31.8           | 11,390                        | 25,197   |
| Grand fir                    | 13,695                        | 11.9           | 10,720                        | 2,975    |
| Subalpine fir                | 5,519                         | 4.8            | 1,225                         | 4,294    |
| Western redcedar             | 3,098                         | 2.7            | 3,098                         | 0        |
| Western hemlock <sup>2</sup> | 2,191                         | 1.9            | 2,191                         | 0        |
| Engelmann spruce             | 9,635                         | 8.4            | 4,770                         | 4,865    |
| Lodgepole pine               | 4,816                         | 4.2            | 1,224                         | 3,592    |
| Whitebark and limber pines   | 309                           | .3             | 35                            | 274      |
| Total                        | 114,638                       |                | 60,518                        | 54,120   |
| Hardwoods:                   |                               |                |                               |          |
| Aspen                        | 75                            | .1             | ( <sup>3</sup> )              | 75       |
| Cottonwood                   | 241                           | .2             | 167                           | 74       |
| Birch                        | 0                             |                | 0                             | 0        |
| Total                        | 316                           |                | 167                           | 149      |
| Total, all species           | 114,954                       | 100.0          | 60,685                        | 54,269   |

<sup>1</sup> International 1/4 -inch log rule.

<sup>2</sup> Includes 78 million board feet of mountain hemlock.

<sup>3</sup> Less than 0.5 million board feet.

Table 18.—Net cubic-foot volume of growing stock on commercial forest land,  
by species and State subunits, Idaho, 1954

| Species                      | State                         |                | Northern                      | Southern |
|------------------------------|-------------------------------|----------------|-------------------------------|----------|
|                              | <i>Million<br/>cubic feet</i> | <i>Percent</i> | <i>Million<br/>cubic feet</i> |          |
| Softwoods:                   |                               |                |                               |          |
| Western white pine           | 2,389                         | 9.2            | 2,389                         | 0        |
| Ponderosa pine               | 3,236                         | 12.5           | 1,220                         | 2,016    |
| Western larch                | 1,333                         | 5.2            | 1,232                         | 101      |
| Douglas-fir                  | 7,665                         | 29.6           | 2,462                         | 5,203    |
| Grand fir                    | 2,709                         | 10.4           | 2,186                         | 523      |
| Subalpine fir                | 1,514                         | 5.8            | 310                           | 1,204    |
| Western redcedar             | 740                           | 2.9            | 740                           | 0        |
| Western hemlock <sup>1</sup> | 506                           | 2.0            | 506                           | 0        |
| Engelmann spruce             | 1,790                         | 6.9            | 860                           | 930      |
| Lodgepole pine               | 3,694                         | 14.2           | 1,249                         | 2,445    |
| Whitebark and limber pines   | 116                           | .4             | 12                            | 104      |
| Total                        | 25,692                        |                | 13,166                        | 12,526   |
| Hardwoods:                   |                               |                |                               |          |
| Aspen                        | 189                           | .7             | ( <sup>2</sup> )              | 189      |
| Cottonwood                   | 59                            | .2             | 39                            | 20       |
| Birch                        | 5                             | 0              | 5                             | 0        |
| Total                        | 253                           |                | 44                            | 209      |
| Total, all species           | 25,945                        | 100.0          | 13,210                        | 12,735   |

<sup>1</sup> Includes 18 million cubic feet of mountain hemlock.

<sup>2</sup> Less than 0.5 million cubic feet.

Table 19.—Net board-foot volume<sup>1</sup> of live sawtimber on commercial forest land,  
by diameter class groups and State subunits, Idaho, 1954

| Diameter class group<br>(inches) | State                         |                | Northern                      | Southern |
|----------------------------------|-------------------------------|----------------|-------------------------------|----------|
|                                  | <i>Million<br/>board feet</i> | <i>Percent</i> | <i>Million<br/>board feet</i> |          |
| 11.0 - 20.9                      | 57,661                        | 50.2           | 32,838                        | 24,823   |
| 21.0 - 30.9                      | 37,530                        | 32.6           | 19,608                        | 17,922   |
| 31.0 - 40.9                      | 15,183                        | 13.2           | 6,478                         | 8,705    |
| 41.0 and larger                  | 4,580                         | 4.0            | 1,761                         | 2,819    |
| Total, all diameters             | 114,954                       | 100.0          | 60,685                        | 54,269   |

<sup>1</sup> International 1/4 -inch log rule.

Table 20.—Net cubic-foot volume of all timber on commercial forest land, by classes of material and State subunits, Idaho, 1954

| Class of material    | State                 |         | Northern              | Southern |
|----------------------|-----------------------|---------|-----------------------|----------|
|                      | Million<br>cubic feet | Percent | Million<br>cubic feet |          |
| Growing stock:       |                       |         |                       |          |
| Sawtimber trees:     |                       |         |                       |          |
| Sawlog portion       | 16,775                | 56.1    | 8,879                 | 7,896    |
| Upper stem portion   | 2,084                 | 7.0     | 883                   | 1,201    |
| Total                | 18,859                |         | 9,762                 | 9,097    |
| Poletimber trees     | 7,086                 | 23.7    | 3,448                 | 3,638    |
| Total, growing stock | 25,945                |         | 13,210                | 12,735   |
| Other material:      |                       |         |                       |          |
| Sound cull trees     | 493                   | 1.6     | 195                   | 298      |
| Rotten cull trees    | 1,843                 | 6.2     | 1,749                 | 94       |
| Hardwood limbs       | 1                     | 0       | (1)                   | 1        |
| Salvable dead trees  | 1,614                 | 5.4     | 555                   | 1,059    |
| Total                | 3,951                 |         | 2,499                 | 1,452    |
| Total, all timber    | 29,896                | 100.0   | 15,709                | 14,187   |

<sup>1</sup> Less than 0.5 million cubic feet.

Table 21.—Total land area, commercial forest land area, and live sawtimber volume on commercial forest land, by State subunits and counties, Idaho, 1954

| County             | Total land        | Commercial  | Live    |                     | County             | Total land        | Commercial  | Live    |                     |
|--------------------|-------------------|-------------|---------|---------------------|--------------------|-------------------|-------------|---------|---------------------|
|                    | area <sup>1</sup> | forest land | area    | sawtimber           |                    | area <sup>1</sup> | forest land | area    | sawtimber           |
|                    | Thousand          | Thousand    | Million | volume <sup>2</sup> |                    | Thousand          | Thousand    | Million | volume <sup>2</sup> |
|                    | acres             | acres       | Percent | board feet          |                    | acres             | acres       | Percent | board feet          |
| NORTHERN IDAHO     |                   |             |         |                     |                    |                   |             |         |                     |
| Benewah            | 506               | 393         | 2.5     | 1,946               | Kootenai           | 804               | 591         | 3.7     | 3,320               |
| Bonner             | 1,111             | 884         | 5.6     | 4,899               | Latah              | 698               | 417         | 2.6     | 3,240               |
| Boundary           | 816               | 547         | 3.5     | 3,725               | Lewis              | 306               | 92          | .6      | 426                 |
| Clearwater         | 1,614             | 1,329       | 8.4     | 15,158              | Nez Perce          | 542               | 101         | .6      | 523                 |
| Idaho <sup>3</sup> | 4,500             | 1,977       | 12.5    | 18,070              | Shoshone           | 1,670             | 1,429       | 9.0     | 9,378               |
|                    |                   |             |         |                     | Total, Northern    | 12,567            | 7,760       | 49.0    | 60,685              |
| SOUTHERN IDAHO     |                   |             |         |                     |                    |                   |             |         |                     |
| Ada                | 670               | 3           | (4)     | 12                  | Gem                | 355               | 45          | .3      | 524                 |
| Adams              | 881               | 450         | 2.9     | 5,873               | Gooding            | 462               | 0           | 0       | 0                   |
| Bannock            | 719               | 92          | .6      | 334                 | Idaho <sup>3</sup> | 949               | 384         | 2.4     | 3,519               |
| Bear Lake          | 632               | 140         | .9      | 522                 | Jefferson          | 697               | 0           | 0       | 0                   |
| Bingham            | 1,326             | 35          | .2      | 110                 | Jerome             | 380               | 0           | 0       | 0                   |
| Blaine             | 1,695             | 250         | 1.6     | 1,208               | Lemhi              | 2,934             | 1,249       | 7.9     | 5,904               |
| Boise              | 1,224             | 838         | 5.3     | 7,397               | Lincoln            | 770               | 0           | 0       | 0                   |
| Bonneville         | 1,181             | 273         | 1.7     | 882                 | Madison            | 303               | 46          | .3      | 129                 |
| Butte              | 1,434             | 109         | .7      | 499                 | Minidoka           | 480               | 0           | 0       | 0                   |
| Camas              | 677               | 126         | .8      | 855                 | Oneida             | 762               | 38          | .2      | 98                  |
| Canyon             | 371               | 1           | (4)     | 1                   | Owyhee             | 4,895             | 12          | .1      | 21                  |
| Caribou            | 1,118             | 272         | 1.7     | 671                 | Payette            | 258               | (5)         | (4)     | (6)                 |
| Cassia             | 1,628             | 63          | .4      | 229                 | Power              | 903               | 51          | .3      | 153                 |
| Clark              | 1,121             | 196         | 1.3     | 1,538               | Teton              | 294               | 84          | .5      | 243                 |
| Custer             | 3,157             | 960         | 6.1     | 3,824               | Twin Falls         | 1,243             | 20          | .1      | 28                  |
| Elmore             | 1,960             | 393         | 2.5     | 3,850               | Valley             | 2,354             | 1,311       | 8.3     | 12,621              |
| Franklin           | 427               | 53          | .3      | 307                 | Washington         | 944               | 84          | .5      | 1,046               |
| Fremont            | 1,164             | 485         | 3.1     | 1,871               | Yellowstone        |                   |             |         |                     |
|                    |                   |             |         |                     | National Park      | 37                | 0           | 0       | 0                   |
|                    |                   |             |         |                     | Total, Southern    | 40,405            | 8,063       | 51.0    | 54,269              |
|                    |                   |             |         |                     | Total, Idaho       | 52,972            | 15,823      | 100.0   | 114,954             |

<sup>1</sup> County land area from U.S. Bureau of the Census: Land and Water Area of the United States, 1950.

<sup>2</sup> Trees 11.0 inches d.b.h. and larger, measured by International 1/4-inch log rule.

<sup>3</sup> Idaho County is divided by the Salmon River and lies partly in each state subunit.

<sup>4</sup> Less than 0.05 percent.

<sup>5</sup> Less than 0.5 thousand acres.

<sup>6</sup> Less than 500 thousand board feet.

**Table 22.—Percent of commercial forest land by stand-size classes, State subunits, and stocking classes<sup>1</sup>, Idaho, 1954**

| Stand-size class           | State |        |      |       | Northern |        |      |       | Southern |        |      |       |
|----------------------------|-------|--------|------|-------|----------|--------|------|-------|----------|--------|------|-------|
|                            | Well  | Medium | Poor | Total | Well     | Medium | Poor | Total | Well     | Medium | Poor | Total |
| Sawtimber stands           | 13.9  | 19.8   | 21.6 | 55.3  | 13.2     | 15.3   | 16.9 | 45.4  | 14.6     | 24.1   | 26.0 | 64.7  |
| Poletimber stands          | 10.2  | 9.5    | 5.0  | 24.7  | 9.8      | 8.2    | 6.4  | 24.4  | 10.6     | 10.8   | 3.7  | 25.1  |
| Seedling-sapling stands    | 4.2   | 2.9    | 3.0  | 10.1  | 5.9      | 3.9    | 5.2  | 15.0  | 2.5      | 1.9    | 1.0  | 5.4   |
| Total, stocked             | 28.3  | 32.2   | 29.6 | 90.1  | 28.9     | 27.4   | 28.5 | 84.8  | 27.7     | 36.8   | 30.7 | 95.2  |
| Nonstocked and other areas | 0     | 0      | 0    | 9.9   | 0        | 0      | 0    | 15.2  | 0        | 0      | 0    | 4.8   |
| Total, all classes         | —     | —      | —    | 100.0 | —        | —      | —    | 100.0 | —        | —      | —    | 100.0 |

<sup>1</sup> Percentage of available space occupied by tree crowns: well stocked—over 70 percent; medium stocked—40 to 70 percent; poorly stocked—10 to 40 percent; nonstocked—less than 10 percent.

**Table 23.—Area of commercial forest land by stocking classes, major forest types, and State subunits, Idaho, 1954**

| Stocking class <sup>1</sup> | Western white pine | Ponderosa pine | Western larch | Douglas-fir | Western hemlock | Western redcedar | Lodgepole pine <sup>2</sup> | Spruce-fir <sup>3</sup> | Hardwoods | Total  |
|-----------------------------|--------------------|----------------|---------------|-------------|-----------------|------------------|-----------------------------|-------------------------|-----------|--------|
| <i>Thousands of acres</i>   |                    |                |               |             |                 |                  |                             |                         |           |        |
| <b>IDAHO</b>                |                    |                |               |             |                 |                  |                             |                         |           |        |
| Well                        | 563                | 471            | 231           | 1,167       | 41              | 62               | 1,307                       | 396                     | 235       | 4,473  |
| Medium                      | 261                | 744            | 226           | 1,735       | 52              | 101              | 1,022                       | 694                     | 254       | 5,089  |
| Poor                        | 416                | 1,122          | 208           | 1,622       | 47              | 86               | 551                         | 587                     | 49        | 4,688  |
| Nonstocked and other        | 680                | 287            | 65            | 274         | 27              | 9                | 143                         | 78                      | 10        | 1,573  |
| Total                       | 1,920              | 2,624          | 730           | 4,798       | 167             | 258              | 3,023                       | 1,755                   | 548       | 15,823 |
| <b>NORTHERN IDAHO</b>       |                    |                |               |             |                 |                  |                             |                         |           |        |
| Well                        | 563                | 228            | 230           | 271         | 41              | 62               | 540                         | 290                     | 16        | 2,241  |
| Medium                      | 261                | 353            | 225           | 456         | 52              | 101              | 285                         | 370                     | 21        | 2,124  |
| Poor                        | 416                | 363            | 205           | 461         | 47              | 86               | 291                         | 339                     | 3         | 2,211  |
| Nonstocked and other        | 680                | 165            | 64            | 98          | 25              | 9                | 93                          | 40                      | 10        | 1,184  |
| Total                       | 1,920              | 1,109          | 724           | 1,286       | 165             | 258              | 1,209                       | 1,039                   | 50        | 7,760  |
| <b>SOUTHERN IDAHO</b>       |                    |                |               |             |                 |                  |                             |                         |           |        |
| Well                        | 0                  | 243            | 1             | 896         | 0               | 0                | 767                         | 106                     | 219       | 2,232  |
| Medium                      | 0                  | 391            | 1             | 1,279       | 0               | 0                | 737                         | 324                     | 233       | 2,965  |
| Poor                        | 0                  | 759            | 3             | 1,161       | 0               | 0                | 260                         | 248                     | 46        | 2,477  |
| Nonstocked and other        | 0                  | 122            | 1             | 176         | 2               | 0                | 50                          | 38                      | 0         | 389    |
| Total                       | 0                  | 1,515          | 6             | 3,512       | 2               | 0                | 1,814                       | 716                     | 498       | 8,063  |

<sup>1</sup> Percentage of available space occupied by tree crowns: well stocked—over 70 percent; medium stocked—40 to 70 percent; poorly stocked—10 to 40 percent; nonstocked—less than 10 percent.

<sup>2</sup> Includes whitebark pine and limber pine types.

<sup>3</sup> Engelmann spruce, grand fir, and subalpine fir types.



Table 24.—Net annual growth of live sawtimber<sup>1</sup> on commercial forest land by species and State subunits, Idaho, 1954

| Species            | State                         |                | Northern                      | Southern |
|--------------------|-------------------------------|----------------|-------------------------------|----------|
|                    | <i>Million<br/>board feet</i> | <i>Percent</i> | <i>Million<br/>board feet</i> |          |
| Softwoods:         |                               |                |                               |          |
| Western white pine | 202                           | 12.3           | 202                           | 0        |
| Ponderosa pine     | 223                           | 13.6           | 93                            | 130      |
| Western larch      | 54                            | 3.3            | 49                            | 5        |
| Douglas-fir        | 445                           | 27.0           | 191                           | 254      |
| Grand fir          | 318                           | 19.3           | 249                           | 69       |
| Subalpine fir      | 71                            | 4.3            | 11                            | 60       |
| Western redcedar   | 59                            | 3.6            | 59                            | 0        |
| Hemlock            | 27                            | 1.6            | 27                            | 0        |
| Spruce             | 134                           | 8.1            | 42                            | 92       |
| Lodgepole pine     | 97                            | 5.9            | 30                            | 67       |
| Other softwoods    | 6                             | .4             | 2                             | 4        |
| Total              | 1,636                         |                | 955                           | 681      |
| Hardwoods          | 10                            | .6             | 4                             | 6        |
| Total, all species | 1,646                         | 100.0          | 959                           | 687      |

<sup>1</sup> International 1/4-inch log rule.

Table 25.—Net annual growth of growing stock on commercial forest land by species and State subunits, Idaho, 1954

| Species            | State                         |                | Northern                      | Southern |
|--------------------|-------------------------------|----------------|-------------------------------|----------|
|                    | <i>Million<br/>cubic feet</i> | <i>Percent</i> | <i>Million<br/>cubic feet</i> |          |
| Softwoods:         |                               |                |                               |          |
| Western white pine | 44                            | 9.4            | 44                            | 0        |
| Ponderosa pine     | 41                            | 8.8            | 19                            | 22       |
| Western larch      | 25                            | 5.3            | 23                            | 2        |
| Douglas-fir        | 117                           | 25.0           | 52                            | 65       |
| Grand fir          | 71                            | 15.1           | 59                            | 12       |
| Subalpine fir      | 22                            | 4.7            | 5                             | 17       |
| Western redcedar   | 18                            | 3.8            | 18                            | 0        |
| Hemlock            | 8                             | 1.7            | 8                             | 0        |
| Spruce             | 32                            | 6.8            | 12                            | 20       |
| Lodgepole pine     | 80                            | 17.1           | 38                            | 42       |
| Other softwoods    | 2                             | .4             | ( <sup>1</sup> )              | 2        |
| Total              | 460                           |                | 278                           | 182      |
| Hardwoods          | 9                             | 1.9            | ( <sup>1</sup> )              | 9        |
| Total, all species | 469                           | 100.0          | 278                           | 191      |

<sup>1</sup> Less than 0.5 million cubic feet.

**Table 26.—Average board-foot volume per acre<sup>1</sup> of live sawtimber on commercial forest land, by stand-size classes and State subunits, Idaho, 1954**

| Stand-size class              | State        | Northern     | Southern     |
|-------------------------------|--------------|--------------|--------------|
| Sawtimber stands              | 12,560       | 16,513       | 9,893        |
| Poletimber stands             | 1,156        | 1,128        | 1,182        |
| Seedling-sapling stands       | 223          | 157          | 399          |
| Nonstocked and<br>other areas | 186          | 191          | 170          |
| <b>All classes</b>            | <b>7,265</b> | <b>7,820</b> | <b>6,731</b> |

<sup>1</sup> International 1/4-inch log rule.

**Table 27.—Average cubic-foot volume per acre of growing stock on commercial forest land, by stand-size classes and State subunits, Idaho, 1954**

| Stand-size class              | State        | Northern     | Southern     |
|-------------------------------|--------------|--------------|--------------|
| Sawtimber stands              | 2,397        | 3,000        | 1,990        |
| Poletimber stands             | 1,192        | 1,280        | 1,109        |
| Seedling-sapling stands       | 165          | 153          | 198          |
| Nonstocked and<br>other areas | 43           | 41           | 49           |
| <b>Total</b>                  | <b>1,640</b> | <b>1,702</b> | <b>1,579</b> |





